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SQUAW CREEK IMPROVEMENT

Rectifying a Stream in Lawton, Oklahoma—Open Conduit Lined with Reinforced Concrete—Forms for Concrete Lining—Expansion Joints—Iron Railing—Bridges at Street Crossings

By Z. M. SCIFRES, City Engineer

THE city of Lawton, Okla., with a population of about 10,000, drains into Squaw creek, a stream about twenty-five feet wide and six feet deep where it winds its way snake-like through and across the southern portion of the city. The ground is flat on each side of the stream back for an average distance of about 600 feet. The greater part of the city lies north of Squaw creek on a gradually sloping hillside, rising about 80 feet to the mile; while the rise on the south side is much greater yet gradual.

The drainage area of this creek above the city is approximated at 4,000 acres. The outlets for the storm water sewer system for the entire city were made into the old channel of Squaw creek; one outlet (a 48-inch brick sewer) emptied into the old creek a short distance below the west boundary of the city, and the other outlet (a 62-inch brick sewer) was designed to empty farther down the stream near the east boundary line.

On account of the very tortuous course of this creek, its uneven bottom and the obstruction to flow through the channel due to rubbish, brush, etc., frequent overflows occurred during heavy rains, doing much damage to the surrounding property and shutting off that portion of the city lying on the south from the main part during such overflows. And during the dry season pools of water were held by low places in the bottom of the creek and these, becoming stagnant, created a condition very menacing to the health of the neighborhood.

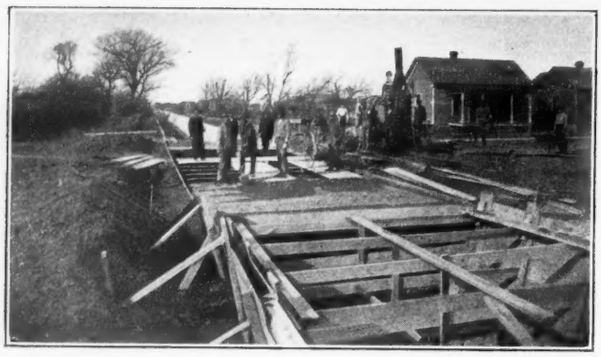
After many complaints from the citizens suffering these inconveniences, an attempt was made to partially remedy the condition by straightening the course in the extreme cases and filling the pools at as little expense as possible. But this was of no avail and it was soon found that an improvement of a more permanent nature was absolutely necessary, as that portion of the city lying along this stream was becoming very valuable on account of its closeness to the business center.

About four years ago bonds were issued to improve Squaw creek, but the amount of the issue was found insufficient to meet the demands and, because all the property could not partake of the benefits to come from the expenditure of this amount, some dissatisfaction arose over the proposed improvement and the whole affair was dropped at that time. A second bond issue of $40,000 was voted about a year ago and plans were made to cover as much of the improvement as possible with this issue.

The city engineer was placed in charge of this work. Cross sections were taken 25 and 50 feet apart on various routes and all information as to existing conditions was obtained. It was decided after thorough investigation that the route should be along I avenue, from that point where the creek touched the avenue between Second and Third streets to the point where the creek crossed the avenue between Eighth and Ninth streets, and beyond each end of this stretch the route would follow the general direction of the old channel of the creek, making the course as straight as possible. The street grades on I avenue and all cross streets had been previously established so that all street drainage was to the avenue, making this the proper route to be selected.

A plan was adopted for an open conduit with bottom and sides of concrete, reinforced and 6 inches thick. This conduit is 11 feet wide at the bottom and 16 feet wide at the top, both inside measurements. The depth varies with the grade of the street alongside of the conduit, being 6 feet at the minimum and 7.8 feet at the maximum, the average being about 6.5 feet. The total length of work so far constructed is about 3,500 feet. A number of streets intersect Avenue I and at each of such intersections a bridge spans the conduit, the bridges being sufficiently wide to include both roadway and sidewalks. These bridges are of steel beam and concrete arch construction. The conduit opening is guarded by a railing constructed along the top of each wall and continuing unbroken along each side of each of the bridges. This consists of posts and two rails of two-inch gas pipe, the posts being set into the concrete curbing which forms the top of the conduit lining.

At each bridge provisions were made for catch basins and outlets for future storm sewers. In addition to these, outlets were provided at various places for the purpose of draining water from the old channel; these outlets being planned as a temporary arrangement only, to be abandoned when the old creek bed has been filled up. Avenue I is 80 feet wide, and an ordinance was passed establishing the tree lines, sidewalk lines and curb lines so that there would be a driveway approxi-



FORMS FOR CONDUIT WALLS IN PLACE
Outside forms braced against bank.

mately 17 feet wide on each side of the conduit. The tops of the concrete walls extend three inches above the crown of the street, forming a curb in the same manner in which a center parking in a roadway is enclosed.

The plans were approved by the Mayor and Council, and the contract was let to E. R. Kerby, a local contractor. Work on actual construction began about the first of last November, and was finished the latter part of January, excellent weather conditions permitting the work to be carried on at a very rapid pace.

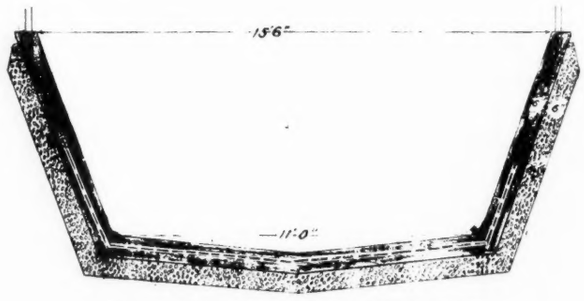
Earth from the excavation was deposited along the banks of the old creek and in some places even in the old channel, which crossed and recrossed the conduit in three or four places. Some risk was taken in filling the old channel, but connections between the stream and the new conduit were made in ample time to avoid damage from floods due to the obstruction of the old channel.

A varying depth of conduit combined with a constant width at both the bottom and the top, resulting in a varying slope at the sides, made it somewhat difficult to design a form to be used in the construction of the concrete walls. This difficulty was overcome by making the form for the inside of the walls in two sections, so that a slight change in the batter could be made in the upper half to secure the necessary width at the top of the walls. These forms were made in 12-foot sections and consisted of 1-inch tongued and grooved boards, nailed to 2 x 4 vertical strips spaced 4 feet apart, two strips being placed about 2 inches apart at intervals and the struts being slipped into the slots thus formed. Each section of the form was about 4 feet by 12 feet and could therefore be easily handled. To hold these in place a set of standard cross struts was made for the bottom set of forms, these consisting of two horizontal 2 x 6's and three pairs of vertical 2 x 4 strips so nailed to these as to hold them parallel and about 3 feet apart. The ends of the strut pieces were then cut on the proper bevel so that, when slipped into the slots on the forms previously described, it held these at the proper distance apart and at the proper batter. As the upper section of the forms varied in batter from section to section, the struts for these were made in much the same way except that the upper of the two horizontal pieces was adjustable in its length, thus permitting the tops of the upper form sections to vary in their distance from each other. These struts were found to hold the wall forms very rigid.

The sides of the excavated ditch were trimmed so as to be used as the back form for the concrete lining. The soil was a "gumbo" and was found in excellent condition for serving this purpose. In some cases the banks were low and back lagging was necessary, this being braced against the surface of the ground. In most cases this back lagging was removed before the back-filling was done, the concrete standing by itself until the back-filling could be placed. In extreme cases back lagging and the 4 x 4 braces were left in place, in most cases the lagging being removed and the braces only being left.

The forms were not greased or otherwise treated, but there was never any trouble from the concrete adhering to them. The forms were carefully swept off each time before being used again. They were usually removed about the third day after the concrete had been placed. Any rough places or honeycombing which appeared upon the surface of the walls were then plastered up with cement mortar. The bottom of the conduit was constructed in advance of the walls.

The concrete was mixed by a machine mixer which was moved along the side of the conduit and discharged the concrete through an inclined trough into hand carts which carried it to its place in the bottom or walls. During the construction of the walls runways for the wheelbarrows were supported by the struts which braced the wall forms.



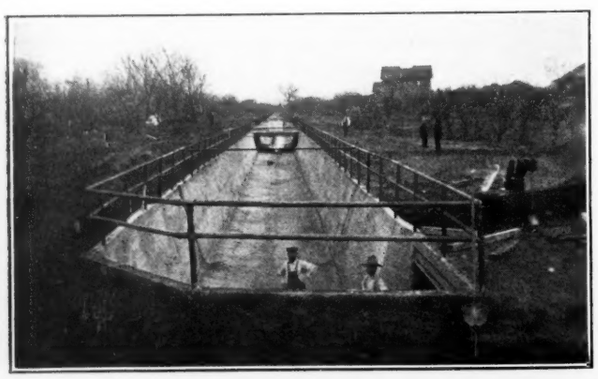
SECTION OF CONDUIT AT EXPANSION JOINT
Inner section is conduit; outer section is support for expansion joint.

At intervals of 100 feet expansion joints were left in the lining. These were one inch wide and were made by inserting a board between two sections of concrete, which board was afterward withdrawn and the space filled with asphalt filler. This joint was continuous across the entire section of the concrete lining. Under the joint was placed a 6-inch concrete slab which lapped 2½ inches under each section of lining. These slabs were constructed in advance of the lining proper.

By means of wooden pins set in the concrete coping of the side walls, holes were left for the gas pipe posts of the railing. A crew cut the pipe and set the railing after the concrete walls had hardened fully to permit this work. A second crew followed which did all the remaining back-filling, grading and placing the work in a presentable condition.

Since the conduit has been completed the old channel has been filled and the property once taken up by old Squaw creek is being reclaimed and improved extensively. It is proposed to extend the conduit to take the place of the tortuous channel where it winds the remainder of its course through the city.

The contract prices of this work were as follows: Concrete, $7.00 per cubic yard; earth excavation, 26 cts. per cubic yard; reinforcement, 4 cts. per pound; bridge steel, $63.90 per ton; corrugated metal, $14.00 per square; 3-inch field tile, 15 cts. per foot; 2-inch gas pipe, 18 cts. per foot. The total cost of the improvement was $39,833.



COMPLETED CONDUIT
Taken at bend in conduit. Shows railing and bridge a block away.

MUNICIPAL IMPROVEMENTS IN MEXICO

Encouraged by Federal Government—Practically All by United States Contractors—Water Supply a Difficult Problem—Paving and Gas

By W. D. Hornaday.

The construction of quite a number of municipal works and improvements in different cities of Mexico is being held in abeyance pending the settlement of the existing disturbed conditions due to revolutionary uprisings in various localities.

It was not so many years ago that Mexico entered upon an era of municipal betterments. Prior to that time there had been practically no attention given to the establishment of modern public utilities in the different cities and towns. Even those having a population of several hundred thousands of people, such as the capital of the republic and Guadalajara, were primitive in the type of their municipal works. The federal government of Mexico is largely responsible for the general interest that is being taken in the establishment of modern municipal improvements in the different communities. It has been the policy of the government to bear a part if not all of the expense of constructing a certain character of municipal improvements in the coast cities. This paternal spirit had its origin through the necessity of making the gulf ports as well as those on the Pacific side of the country as sanitary as possible and to free them of the possibility of yellow fever and other diseases to which they had formerly been subjected. The government during the last ten years has spent many million dollars in the construction of sanitary and sewer systems as well as water-works plants and distributing systems in the cities of Vera Cruz, Tampico, Coatzacoalcos, Salina Cruz, Manzanillo and Mazatlan. Through these expenditures of federal funds, augmented by appropriations made by the different states in which the cities concerned are situated, there has been brought about a complete transformation of these deepwater ports. Their health conditions have been brought up to a high standard. Yellow fever and other contagious diseases, due to unsanitary conditions that formerly prevailed in these places, have been practically eliminated. With the inauguration of these public utilities have come other municipal improvements, such as street paving, surface drainage, the establishment of parks, driveways and the construction of new sidewalks and a variety of other pleasing features that go to make up a town of complete modernness.

Following the example set by the federal and state governments as to these deepwater ports the municipal authorities of interior towns set about making similar improvements with the result that a great deal has been accomplished along this line during the last few years, but there remains an enormous amount of improvements in the way of establishment of public utilities, street paving and sidewalk construction still to be done.

It is a notable fact that practically all of the construction of these municipal enterprises has been done by American contractors. Exceptions to this rule are in the cities of Vera Cruz, Coatzacoalcos and Salina Cruz, where the work was carried out by a British contracting firm. The material for the sewers for the different towns has come chiefly from the United States, as has also the machinery for the water-works plants and equipment that is necessary in carrying on the works of improvement. The asphalt and brick that are used in paving streets and laying sidewalks are native products.

While the municipal improvements so far have been confined to the larger cities it is expected that with the further development of the country the smaller towns will join the upbuilding movement, thus affording splendid opportunities for the further sale of American-made machinery.

Among the interior cities that have made extensive municipal improvements during the last few years are Monterey, which has been equipped with complete water-works and sewer systems at a cost of about $5,000,000; Chihuahua, which has also been supplied with these public utilities; Torreon, Zacatecas, Guadalajara, Hermosillo, Merida, Puebla and Durango. There are a number of towns of considerable size which have under consideration the establishment of municipal works, among them being Saltillo, San Luis Potosi, Aguas Calientes, Parral, Culiacan, Tepic, Oaxaca, Toluca, Irapuato, Campeche, Chilpancingo, Cuernavaca, Morelia, Jalapa, Nuevo Laredo, Queretero, Guanajuato, Victoria, Pachuca and Colima. These towns range in population from 15,000 to 45,000, and while several of them are already equipped with water-works systems of more or less primitiveness there remains a great amount of other improvements to be made to bring them up to the standard of the other cities of the country that have already adopted the policy of modern improvements in their public utilities.

Perhaps the most notable feature of the work of advancement of the cities of Mexico is street paving. An enormous amount of this character of work has been done during the last few years. This is particularly true as to the City of Mexico, Guadalajara and Vera Cruz. In Monterey considerable street paving has been done and arrangements are now being made to extend this improvement to all of the streets in the business portion of the city and into the residence districts. The original paving in Monterey, covering several blocks in the heart of the city, was done several years ago, vitrified brick being the material that was used. It is now purposed to use asphalt for the new paving that is to be put down. In San Luis Potosi and Chihuahua there has also been done a considerable amount of street paving, thereby adding wonderfully to the good appearance of those cities.

One of the difficult problems for most of the larger cities of Mexico, particularly those that are situated upon the arid central plateau, is that of providing an adequate water supply. In Monterey this difficulty was overcome by the construction of a great reservoir some distance from the city which is supplied by wells and the water is brought down to the distributing system by gravity. In Durango a similar method is in operation for obtaining the water supply, the main reservoir being situated close to and high above the city. Great difficulty was experienced in developing the water supply for the cities of Zacatecas and San Luis Potosi, but it was finally overcome and the water supply is now ample for all the needs of the people of those places. Where underground flows can not be found it is usually practical to obtain the necessary supply by the construction of storage reservoirs, by which means the flood waters are gathered. Many of the larger towns of Mexico are not situated upon or near running streams of water, and this adds to the difficulty in providing ample and permanent supply for such places. The installation of a water supply and distributing system for the City of Mexico has been in progress for several years and is still lacking a great deal of being finished. It is estimated that an additional expenditure of $10,000,000 will be required to carry out the plans that have been adopted for the big municipal enterprise.

The industrial development and rapid growth which the capital and other cities of the country have taken on within the last few years are creating a constant necessity for enlargements and further improvements to the existing public utility plants.

Municipal ownership of electric light and power plants and systems has not found favor in Mexico, although in a few instances these concerns are owned and operated by the cities.

It is only within the last year that the introduction of gas for municipal use in Mexico has been accomplished. An American concern headed by E. L. Doheny of Los Angeles, Cal., recently completed the installation of a gas plant and distributing system in the City of Mexico, and the establishment of a similar plant in Guadalajara by an American syndicate is now in progress. A syndicate of Canadians headed by William Mackenzie of Toronto has been granted a franchise for installing a gas plant and distributing system in Monterey. It is expected that similar enterprises will be inaugurated in other cities of the country within the next few years.

DETERMINING YIELD OF WELLS

Law of Flow of Ground Water into Wells—Methods of Making an Actual Test and Results Obtained

Paper before the Illinois Water Supply Association by Arthur N. Talbot, Professor of Municipal and Sanitary Engineering, University of Illinois

It is well known that the yield of a well (in other words, the rate of flow into the well) depends upon the depth to which the pumping lowers the water below its normal level, provided, of course, that the general level of the water at a distance from the well, or its pressure in the case of artesian wells, is not lowered by the pumping. The principles of hydraulics may be applied in the analysis of the rate of flow, the spaces in the porous earth between particles acting as small tubes, and the general relation between head and yield are susceptible of expression by mathematical formulas. However, the complexity of the formulas and the uncertainty of information on size of grain and porosity in the water-bearing stratum usually make us hesitate to accept the formulas. This paper describes a simple instance where the measurement of the inflow into a well illustrates the analytical law of flow into wells.

Wells may be classified for our purpose as (1) "non-artesian," defined as those in which the level of the water in the well is below the top of the porous stratum which carries the water to the well and (2) "artesian," defined as those in which the water in the well remains above the top of the porous stratum and in which this stratum is overlaid with a relatively impervious one. The terms "non-artesian" and "artesian" are here used in a broad sense for want of better terms. The analysis of the yield of these two classes of wells is somewhat different. In the first the water actually stands in the porous layer at the level which produces the flow. In the second the water-bearing stratum remains filled and is under a varying head or pressure.

Class No. 1.—*Non-artesian Wells.*—The porous water-bearing layer extends at least from the general level of the water to a point at or above the bottom of the well. (See Fig. 1a.) The formula for yield of well or rate of flow may be shown to be as follows:*

$$Q = k' \frac{H^2 - h^2}{\log \frac{R}{r}}$$

where r is the radius of the well, R is the distance to a point where the level of the water in the ground is not sensibly lowered, H and h are shown in Fig. 1, and k' is a coefficient depending upon the size of grain and porosity of the ground and upon other conditions. The formula for y may also be obtained.

The above formula shows that as the water is lowered in a well the yield increases at first very rapidly, then more slowly until the water is pumped down to the bottom of the water-bearing layer. Fig. 1 (b) illustrates the changing rate of yield. It is seen that when the well is pumped down one-quarter of the depth, the yield will be over 50 per cent of the maximum yield: i. e., over half of the yield when the water in the well is lowered to the bottom of the water-bearing stratum. When the water is down to one-half of the depth, the yield is 75 per cent of the full yield. This relation may not represent the exact conditions of flow, but it expresses a general principle. The analytical formula by which k' is determined (not given here) is of interest in showing the effect of porosity and size of grain upon the yield and also in assisting the judgment in an estimate of the yield of a well under different conditions.

*See Turneaure and Russell's "Public Water Supply" for the derivation of this formula.

Class No. 2.—*Artesian Wells.*—A porous water-bearing stratum is overlaid with a relatively impervious layer, and the water-bearing layer is under pressure. (See Fig. 2a.) A similar analysis to that used in deriving the formula in the previous section may be used for this class, resulting in the following formula:

$$Q = 2\,k't \frac{H - h}{\log \frac{R}{r}}$$

or

$$Q = mz$$

where k' is a coefficient depending upon the porosity and size of grain of the water-bearing stratum, t is the thickness of the water-bearing stratum, r is the radius of the well, R is the distance to the point where the pressure upon the water-bearing stratum is not changed sensibly by the pumping, H and h are as shown in Fig. 2, z is the distance the water is pumped down in the well, and m is a coefficient for any given well as determined from the first equation. The time required to fill the well between the level H and z may be shown to be f (log H — log z).

An important deduction from the equation $Q = mz$ is that the yield varies as the depth the water is pumped down. That is to say, if the yield when the level in the well is 50 ft. below the normal level is a certain amount, the yield when the water is pumped down 100 ft. would be twice as great, and when pumped down 200 feet would be four times as great. This has an important application to deep wells generally. Of course, it is here assumed that the general water level remains constant and that the water is not lowered below the top of the water-bearing stratum. The loss of head into the well and, in the case of deep wells, the loss through the well itself must be allowed for.

Test of a Well of the Artesian Class

In the well here referred to (see Fig. 3a) the excavated part of the well was 16 ft. in diameter and about 30 ft. deep

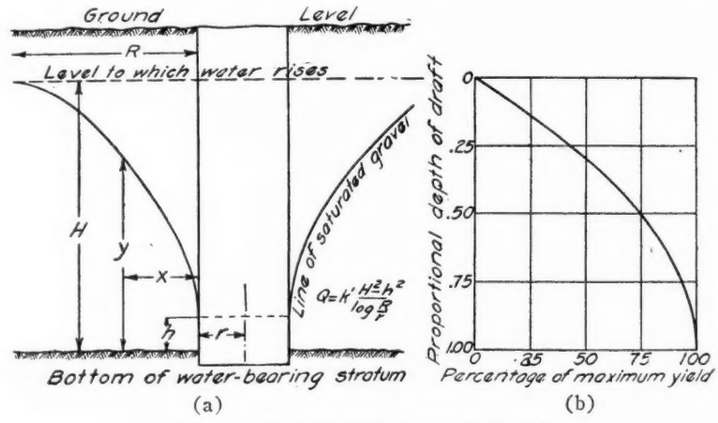


FIG. 1. FLOW IN NON-ARTESIAN WELLS

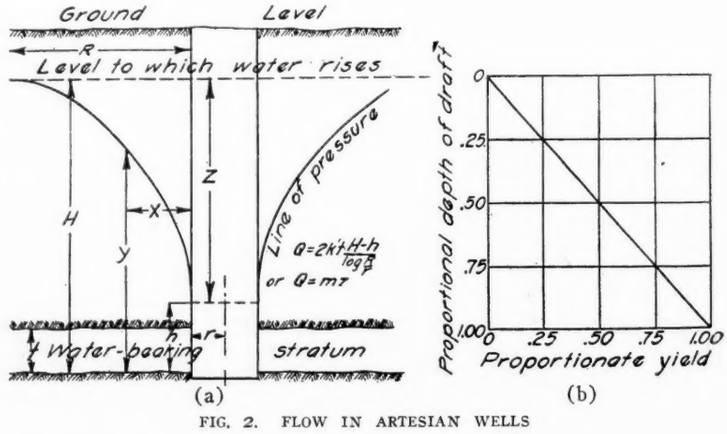


FIG. 2. FLOW IN ARTESIAN WELLS

From the bottom of this a 6-in. tubular well extended down to a depth of about 120 ft., passing through relatively impervious earth to the water-bearing stratum. When not drawn upon the water would rise to within one foot of the surface of the ground. This gives the conditions of artesian flow. The problem was to find the rate of inflow at any given level of water in the well. The following simple plan was used:

The well was pumped down until the water was, say, 20 ft. below its highest level, the pump stopped and the distance of the water below the well platform measured by a city employee and the time of day noted. At four or five times during the next twelve hours the distance down to the water level was measured and the hour noted. With these data before me and having the diameter of the well, it was easy to find the constants for use in the formula before given. The formula becomes:

$$\text{Yield in gallons per 24 hours, } Q = 3{,}250\, z,$$

where z is the distance below the highest water level for the point at which the rate of flow or yield is determined. When the water stands 10 ft. below its highest point the inflow is at the rate of 32,500 gallons in 24 hours. The formula for time required for filling between levels H and y becomes

$$T = 11\tfrac{1}{2}\,(\log_e H - \log_e y),$$

the symbols as before.

The diagram, Fig. 3b, shows that these results follow closely the theoretical or analytical conditions.

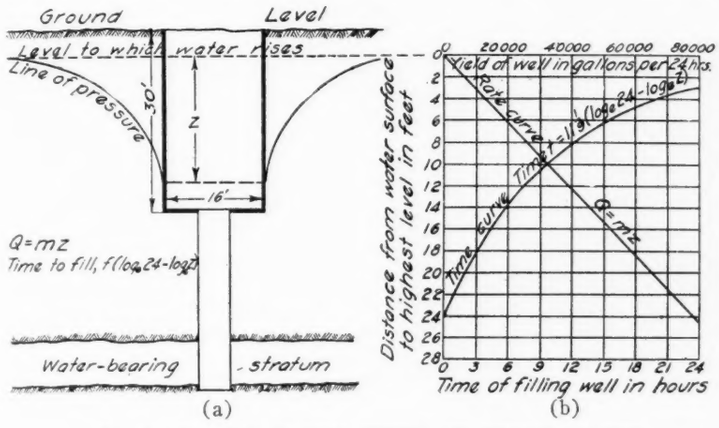


FIG. 3. DIAGRAM OF WELL TESTED AND RESULTS OF TEST

A word as to the applicability of this test. The city wanted to increase its supply. Several propositions for increase had been made. It was a question whether another tubular well should be put down, or whether the wet well should be deepened, or the method of pumping changed from operating the pump an hour twice daily to pumping for a short period several times daily, or whether to lower the pumps and pump continuously. Much misinformation had been given me on the amount of water pumped, the distance the water was commonly pumped down, and the time it took the well to fill. The simple test threw much light on the actual conditions of operation and gave trustworthy information bearing on the best method of securing a larger supply. It not only illustrates the law of flow into wells, but it may suggest the desirability of making tests of existing plants before extending the well system.

RUST IN SERVICE PIPES

The following caution by Superintendent of Water Works George H. Snell, of Attleborough, Mass., may be applicable in other cities The supply is from wells pumped to a standpipe. Superintendent Snell said, in his report for 1910:

I wish at this time to warn those who are building or piping houses to avoid the use of galvanized iron pipe or galvanized range boilers if they wish to prevent rust in water, which invariably is caused by galvanized pipes. It is a well known fact that the town water acts on galvanized or lead pipe. The department, in their part of the service, use cement and tin-lined pipe, and if the same or some other non-corrosive material were used inside the house the rusty water would be eliminated. The rust is more noticeable during the months of August, September and October, when the temperature of the water is the highest, and for this reason the rust is more noticeable in the hot water fixtures than in the cold.

DISINFECTING SWIMMING POOLS

Experiments on the Use of Chloride of Lime for This Purpose—Danger of Infection Removed—Economical Advantages

By MELVILLE C. WHIPPLE

Condensed by the author from a paper read before the Chemical Society of the Brooklyn Polytechnic Institute, February 18, 1911.

In view of the importance which is being attached to the sanitary control of swimming pools, and the general lack of definite information in regard to their bacteriological contents and the means of keeping the bacteria within safe limits, a series of experiments was conducted during the past year to provide data and information along this line. More particularly was it desired to determine the value of chloride of lime, or bleaching powder, in this connection.

There can be no doubt that in the ordinary swimming pool there lies a means of spreading infection and disease which in the past has been generally disregarded or underestimated. More commonly this infection occurs in the form of colds or annoying disorders of the respiratory tract. Individual cases and even epidemics have been brought to the attention of the author, which it was perfectly reasonable to expect had their origin in the use of an unsterilized pool. Swimmers suffering from these affections and even those who are not visibly inconvenienced thereby, consciously and unconsciously emit portions of mucous secretions containing thousands of bacteria. Many forms of bacteria that are commonly found on the skin and in the nose, mouth, and throat, depend for their harmful effect merely upon a depressed condition of vitality. While not as great, the danger likewise exists of contracting venereal diseases, and diseases of the intestinal tract, such as typhoid and dysentery.

The ideal water for swimming purposes, from both the aesthetic and hygienic standpoint, is an artesian supply, abundant in quantity and low in bacteria and organic matter; but a very large number of swimming tanks are necessarily supplied with water which does not conform to such a standard. The experiments with which this article is concerned were conducted upon the tank in the gymnasium of the Brooklyn Polytechnic Institute. This tank is lined with white tile, has a capacity of approximately 25,000 gallons, and is supplied with Brooklyn city water. It has been customary to fill it twice a week with fresh water, maintaining a circulation between times through a heater, and adding fresh water only in the emergency of leakage or of high temperature.

Five separate runs or series of experiments were made, both with and without the use of chloride of lime. Samples were taken each day from the deep and the shallow ends of the pool, and determinations made of turbidity, free and albuminoid ammonia, total bacteria at 37 degrees C. and 20 degrees C, and a presumptive test for the *Bacillus coli communis* which occurs in the intestinal tract. Temperature and other general observations were made at the time of the collection of samples. During the course of each run the tank was not emptied, nor was fresh water added in any appreciable quantity. In a period of five or six days, the time usually occupied by one run, the turbidity rose from 1 to 4 or 5 parts per million. Free and albuminoid ammonia values also increased, the proportion of free being relatively greater when the number of bacteria was greater. The growth of the latter did not show regular pro-

gressive changes but appeared to vary considerably from day to day. This might have been due to differences in the available food supply, variation in temperature or from outside causes. The question of temperature evidently plays an important rôle in the bacteriological contents of a swimming pool. It was repeatedly found that a temperature above 75 degrees brought about a marked and a sudden rise in the number of bacteria. This fact has also been noted by other observers.*

Below is given a partial list of results obtained from analyses made during Run No. 1 when no disinfectant was used, Run No. 4 when a half pound of chloride of lime was added on every other day, and Run No. 5 when one-fourth pound was added each day.

Run No. 1

No Disinfectant Used.

	PARTS PER MILLION OF NITROGEN AS		AVERAGE DAILY NUMBER OF BACTERIA PER C.C.		B. COLI.		
	Free ammonia	Albuminoid ammonia	Agar at 37°C.	Gelatine at 20°C.	0.1 c.c.	1.0 c.c.	10.0 c.c.
First day	....	....	30	20	0	0	+
Second day	.028	.024	110	1,200	0	0	+
Third day	.114	.090	12,500	225,0005	0	+	+
Fourth day	....	.284	5,500	281,000	0	+	+
Fifth day	.220	.086	500	4,250	0	0	+
Sixth day	.264	.140	830	3,500	0	0	+

Run No. 4

Using ½ lb. chloride of lime (20 lbs. per million gals.) every other morning

First day A.M.	....	....	17,000	16,500	0	0	0
(After dosing) P.M.	.034	.060	1	11	0	0	0
Second day P.M.	.020	.120	210	635	0	0	+
Third day P.M. (After dosing)	.044	.078	8	6	0	0	0
Fourth day P.M.	.118	.128	105	725	0	0	+
Fifth day P.M. (After dosing)	.062	.130	25	135	0	0	0
*Eighth day A.M.	.076	.140	1825	105,000	0	0	0
(After dosing) P.M.	....	....	5	45	0	0	0
Ninth day P.M.	.244	.150	54,000	130,000	0	0	+
Tenth day P.M. (After dosing)	.130	.166	0	0	0	0	0

*Less than 25 bathers between the fifth and eighth days.

Run No. 5

Using ¼ lb. chloride of lime (10 lbs. per million gals.) every morning

First day A.M.	.056	.054	550	4,000	0	0	+
(After dosing) P.M.	.074	.078	0	18	0	0	0
Second day P.M.	.070	.080	65	185	0	0	0
Third day P.M.	.126	.088	2,800	5,500	0	0	0
Fourth day P.M.	.130	.112	90	1,350	0	0	0
Fifth day P.M.	.152	.140	35	1,500	0	0	0

It will be noticed from an inspection of the results of Run No. 1 that the highest number of bacteria developed suddenly on the third and fourth days, falling off perceptibly on the days following. This was not due to any great variation in the number of bathers, which averaged 75 for each day of the test. *B. coli* were always present in 10 c.c. of the water, and on the days of the highest counts were present in 1 c.c.

The choice of chloride of lime as a disinfectant was made because of the many advantages this substance possesses over others. Its action upon bacteria is immediate and fatal. The destructive effect has generally been thought to be due to the action of nascent oxygen released from the water by the chlorine, although there is some opinion that the chlorine acts directly upon the organisms. Excellent results have been obtained by the use of this reagent in the treatment of sewage and the purification of water supplies. Furthermore, small quantities accomplish the desired end, and any excess of chlorine which remains is used up in the oxidation of organic matter or iron, both of which are liable to be present. Another advantage of chloride of lime is its low cost. It was not found practicable to add the disinfectant in dry form owing to the dust created and the amount of fine material which afterward floated upon the surface of the water. It was dissolved in about two gallons of warm water and the solution mixed with the contents of the tank.

*Burridge. Pro. Indiana Acad. Science, 1909.

The effect of adding chloride of lime every other day in the proportion of 20 pounds per 1,000,000 gallons is seen in Run No. 4. In spite of the disadvantage of starting with water containing a large number of bacteria, good conditions were restored and maintained for five days. The strong sterilizing properties of the disinfectant are well illustrated from the results obtained during the latter part of this run, when the accumulation of organic matter allowed rapid bacterial growth after the excess of chlorine disappeared. Reducing the quantity of chloride one-half and adding it upon each day maintained a fairly satisfactory condition of the water, as seen from the table under Run No. 5. This amount, however, could hardly be considered sufficient to hold in check any sudden increase in bacteria which might occur from unusual contamination; nor did it maintain the generally low average of the first five days of the previous run.

Tests were also made using 2 pounds and ½ pound weekly, but the efficiency of these quantities was lower, and there was the added disadvantage, in the case of the larger quantity, of a distinct odor and taste of chlorine, which remained in the water for three days. The application of ½ pound on every other day, that is in the proportion of 20 pounds per 1,000,000 gallons of water, of which 35 per cent was available chlorine, gave rise to a very slight odor, which was not objectionable, and which disappeared in a very few hours.

A general consideration of this subject, based upon the results obtained, offers substantial evidence that a swimming pool, operated under the conditions described, without the aid of disinfecting agents, and subject to the contamination incident to general use, has the hygienic qualities of its water imperilled, and provides an environment favorable to a sudden and rapid growth of bacteria. Many of the forms ordinarily regarded as the index of dangerous pollution of water were shown to flourish in these surroundings. *B. coli* and other gas producing organisms were constantly found to be present in Run No. 1, which involved no chemical treatment. Their reappearance after sterilization had been accomplished aptly illustrates how they are introduced by bathers. The degree of efficiency of chloride of lime in moderate doses to check these growths is quite evident from the figures presented. As regards the possibility of harmful effects arising from the use of this substance as a disinfectant, it may be stated that there is no authority available to show that chloride of lime in the quantity used has any physiological action.

There are often economical as well as sanitary advantages to be derived from the disinfection of a swimming pool. As the body of water within the tank can be used for a longer period of time with safety and without deterioration in general attractiveness, a direct saving in water is brought about, and the incidental expenses in connection with the withdrawal of water and subsequent operations of cleaning are eliminated. To deal with a concrete case, that of the tank used in connection with these experiments, it was found that the water remained in a satisfactory condition for a week, if a half-pound of disinfectant was added on every other morning. Previous to its use the water was changed twice a week. Besides maintaining the bathing privilege at all times, there was an actual money saving in dispensing with one change a week which was estimated as follows:

Power for pump in discharging tank contents to sewer	$ .35
Cleaning of tile (labor, etc.)	.50
Coal for heating fresh body of water	5.35
Fresh water to fill tank	3.50
Total	$9.70

The expense of treatment is represented by the cost of 1½ pounds of chloride of lime, obtainable in packages for ten cents a pound, and by the item of a few minutes' labor in applying the solution. The protection afforded is obtained so simply and cheaply that the practice ought to be more prevalent; and there is every evidence that it will be in the future, as serious interest is being very generally aroused on the subject.

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Subscribers are requested to notify us of changes of address, giving both old and new addresses.

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Subscribers desiring information concerning municipal matters are requested to call upon MUNICIPAL JOURNAL AND ENGINEER, which has unusual facilities for furnishing the same, and will do so gladly and without cost.

APRIL 26, 1911.

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City Information Bureau

In every city where the public officials exceed in number a mayor, council, and superintendents of roads, sewers and water works, there is in the minds of most of the citizens an uncertainty just whom to consult concerning municipal matters, either for information or for filing complaints. In the largest cities, even a considerable number of the officials themselves are ignorant as to just what responsibilities and duties come within the scope of the several municipal departments. This uncertainty not only causes considerable inconvenience to the citizens themselves and interferes with their obtaining the remedy of abuses or the information to which they are justly entitled, but it is an annoyance to the municipal officials themselves in that they are being continually called up by citizens with reference to matters which are not within the scope of their duties.

A remedy for this condition in the Borough of Manhattan, New York city, is recommended by Borough President McAneny, who proposes a city information bureau, to which citizens may apply for information of any kind concerning municipal business or affairs, and to which also would be submitted all complaints. The clerks in this bureau, if they could not at once answer the questions, would be supposed to know what department to apply to for such information, and would obtain the same and forward it to the inquirer. Complaints also received by this bureau would be forwarded to the official whose duty it is to investigate or remedy them.

We believe that a bureau, or in the case of a small city, an official, to perform such services is needed in all cities. In villages and other small communities the mayor or village president generally acts in this capacity, and probably this should be considered as a part of his duties. In larger cities, however, the mayor personally should not have his time occupied with inquiries concerning all sorts of minor affairs, although his clerk might well be given this as one of his duties. As the city becomes still larger, however, it is probable that a number of clerks, such as is contemplated for New York city, would find their time well occupied in receiving inquiries and complaints and attending to the same.

Waste in Pubic Water Consumption

We have had occasion several times to call attention to the fact that no class of consumers waste more water than schools and other municipal buildings and that consequently meters or other methods of restricting waste are fully as important here as on any other services in the city, in spite of the seeming anomaly of a city's measuring the water which it delivers to itself.

An illustration of this is furnished by the city of New Bedford, Mass. During the year 1910 there was metered and charged to the schools, engine houses, police stations, city hall, library, almshouse, city stables, cemeteries, parks, wharfs and electric car sprinklers 88,809,000 gallons. In addition, metered water was supplied for drinking fountains, extinguishig fires, flushing sewers, puddling trenches, street operations and water department work which is estimated by the superintendent to have amounted to 200,000,000 gallons. This total of 288,000,000 gallons is about one-tenth of the total consumption of the city.

How much water was being wasted previous to the use of meters is not known; but all departments now watch their meter records and if an abnormal amount is registered they quickly locate and remove the cause, while hitherto they have concerned themselves very little with leaky fixtures. The school department, previous to the installment of meters, had several very large motors operating ventilating machines. One of these was metered and found to use over 27,000,000 gallons a year, and it is fair to presume an equal amount was being used by each of the others. When meters were installed at the end of 1909, these motors were all discontinued and electricity was substituted as a motive power.

The school department now requires all janitors to record the meter readings daily on cards, which are sent at the end of each month to the superintendent's office. We presume also that the janitors are instructed to report at once any abnormal increase in consumption continuing for two or three days.

It is apparent that the saving in the water used by the school motors alone is more than ample to pay all expenses of metering the school buildings. We believe that in practically every city where the matter has been investigated it has been found that schools are the most flagrant wasters of city water to be found.

Steel Pipes for Water Mains

AT the monthly meeting of the Birmingham (England) Association of Mechanical Engineers, held on March 4, a paper was read on welded steel pipes for water mains, etc., of which the following is a synopsis:

The most important requirement of a pipe was reliability, by which was meant not merely that the pipe must be strong, but that the engineer should have a reasonably good idea of just how strong it was. Mild steel pipes were at once the strongest and most reliable, and were gradually but surely taking the

place of cast iron, not only for water but for sewage and gas mains. Another advantage which the lapwelded steel pipe claimed over cast iron was its increased carrying capacity, the smoothness of the bore reducing the friction, known as "skin friction," between the fluid and the surface of the pipe. This was an important point frequently overlooked or often underrated, but seeing that the capacity of a pipe of a given bore may be more than doubled by substituting a smooth for a rough interior surface, it would be understood that it was a matter worth careful consideration. The smoother rolled surface of the lapwelded pipe took an excellent coating or protective solution having a hard glossy surface. Added to this the pipe was a smooth cylinder from end to end, as there was a complete absence of anything in the nature of rivets, butt straps, or lapped plates. In consequence, the frictional resistance was less, and the velocity and carrying capacity greater with lapwelded than with any other form of pipe. The question of the life of steel pipes had long been the subjet of much conjecture, owing to the fact that there were no data on which to base a rule. All that could be said was that the oldest and best-known steel pipe lines were, as far as could be ascertained, in as good condition and as free from corrosion now as when they were laid.

TARRING ROADS AND EYE TROUBLES

By ALBERT SCHEIBLE

One of the reasons for the already widespread use of tar on roads has been the annoyance and the interference with normal vision caused by the dust, which is so much more freely raised by a fast automobile than by a slow vehicle. While such a use of tar and allied compounds has unquestionably been a success in laying the dust, the claim has been occasionally made that the dust raised on the tarred streets was more injurious to the eyes than that free from tar. To test the validity of such claims two French investigators, H. Hruc and C. Fleig, recently made a long series of tests with dust blown into the eyes of rabbits and dogs, using both the dust of untreated roads and that of tarred ones.

They first found that the dust of ordinary roads, no matter whether brushed off the surface of the street or gathered from the air, would not produce eye troubles in rabbits unless its injection was frequently repeated. However, if this dust was rubbed over the eye, it produced a strong secretion of tears and inflamed the eye for a short time. Repeated tests only produced a new inflammation of the eyelids, but in every case this passed away rapidly.

When the same tests were made with dust from tar-treated streets in which the surface already showed wear as the result of long service, the eye inflammation was slightly increased, but otherwise just as with the non-tarry dust. However, on freshly tarred streets or those still in good condition, the eye trouble proved more serious. To ascertain whether the difference was due to the tar, fresh tar was ground up with chalk, pumice or talcum in various proportions and the resulting dust tried on the eyes of the animals. In this case it was found that the seriousness of the inflammation increased with the amount of tar in the mixture. Coal tar alone, when applied to the cornea of the eye, produced much less irritation than if mixed with solid matter; but even such mixture proved less troublesome than the dust from the tarred streets. The reason for this difference was found in the higher bacterial content of the dust off the roads, with which dust such foul matter as the excretions of horses is apt to be mixed.

Tar alone, if applied in sufficient quantity, was found to have an almost etching action on the membranes of the eye, but in the common use of roads the amount of tar getting into the eye would be very small. Under ordinary circumstances the inflammation of the eye would be due to the mechanical grating action of the solid particles in the tar-laden as well as the untarred dust, together with the bacterial action. The latter seemed to be somewhat favored by the chemical action of the tar, but of course the total dust raised from the roads and liable to affect the eyes is very much smaller with the tarred roads than with the untreated ones. Even when ignoring this tremendous difference in the amount of obnoxious dust, the experimenters failed to trace any increase in eye troubles to the use of tar on the roads or streets.

GRANITE BLOCK SPECIFICATIONS

Standard of Association for Standardizing Paving Specifications —Coal Tar, Asphalt or Cement Grout Filler— One Year Guarantee

The committee on stone block pavements of the Association for Standardizing Paving Specifications did not complete the preparation of a set of specifications until after the adjournment of the convention, and then but four members could be got together. It may be said, therefore, that these specifications are approved by their authors only: B. T. Fendall, city engineer of Baltimore, Md.; M. R. Sherrerd, chief engineer Department of Public Works, Newark, N. J.; S. W. Hoag, Jr., deputy chief engineer Department of Docks and Ferries, New York City; and W. A. Hogue, city engineer, Charleston, W. Va.; although the nature of the stone blocks was passed upon by the convention of 1910. No stone blocks other than granite were included in the specifications, although the committee recognized that other kinds should be provided for.

The committee expressed the opinion that the period of guarantee for granite block pavement "need not exceed one year."

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Specifications for Granite Block Paving

The paving blocks, which shall be of medium grained granite, showing an even distribution of constituent material, shall be of uniform quality and texture, without seams, scales or discolorations showing disintegration, free from an excess of mica or feldspar, and equal in every respect to the sample in the office of the engineer.

Blocks shall be of the following dimensions, viz.: not less than 8 nor more than 12 inches long on top, not less than 3½ nor more than 4½ inches wide on top, not less than 5 nor more than 5½ inches deep.

The blocks shall be so dressed that after laying a measurement of the individual joint shall show a width of not more than ½ inch at top and for a depth of 1 inch and a width of not more than 1 inch in any other part of the joint. The head of the block shall be so cut that it shall not have more than ⅜ inch depression from a straight edge laid in any direction across the head and held parallel to the general surface of the block.

Care shall be exercised in handling the blocks so that the edges and corners shall not be chipped or broken, as blocks otherwise acceptable may be rejected on account of spawling.

The blocks shall be sorted and laid in courses of uniform width except in special cases, as may be ordered.

Sub-foundation.—Any soft and spongy material below the sub-grade shall be removed and filled, as directed by the engineer, with sand, gravel or other material satisfactory to the engineer, and thoroughly rammed or rolled. In excavating, care shall be taken not to disturb the sub-foundation, except where necessary to remove the soft and spongy material.

The entire sub-foundation shall be compact and hard and the contractor will be required to thoroughly ram or roll it with a roller satisfactory to the engineer unless the latter shall be satisfied that the sub-foundation is sufficiently hard without it.

Concrete Base.—After the sub-foundation has been prepared to the satisfaction of the engineer a concrete foundation 6 inches thick shall be laid on it. The concrete shall conform with the standard specification for concrete for paving foundations as determined by the Association for Standardizing Paving Specifications.

The grading and sub-foundation shall be completed at least 50 feet in advance of the laying of the concrete.

Cushion Course.—A cushion course of dry, clean sand shall be laid on the concrete base, not less than two inches thick, to insure a uniform bearing and prevent the possibility of any part of any block resting directly on the concrete base.

On this cushion the blocks shall be laid as closely as possible, each block touching the adjoining block on sides and ends, in courses of uniform width. All joints shall be broken with a lap of at least three inches.

Filling Joints.—Depending upon the kind of filler to be used in the joints, the following specifications, A, B or C, shall govern the use of coal tar pitch (A), bituminous asphalt (B), or cement grout (C).

(A) Coal Tar Filler.—Immediately after the blocks are laid sufficient coarse, hot gravel shall be spread over the surface and swept into the joints so as to fill the space between the blocks to a depth of about one inch from the bottom.

The blocks shall then be rammed to thoroughly settle and compact the first layer of gravel in the joints and so as to leave no blocks above or below the general surface of the finished pavement.

The joints shall then be poured one-half full with a coal tar pitch filler as hereinafter described and then filled to within one-half inch of the surface with hot gravel and again poured with the filler, this last pouring shall be flush with the tops of the blocks at the joints. The final pouring of the filler shall be immediately followed with a sufficient amount of hot gravel, applied at the joints, to conceal the filler.

The gravel shall be clean, washed gravel between ¼ and ½ inch in its largest dimensions, not over 25 per cent of which shall be of the ½ inch size.

The filler shall also comply with the following test requirements:

(1) It shall have a specific gravity between 1.23 and 1.33 at 60° F.

(2) It shall have a melting point between 120 and 130° F.

(3) It shall contain between 25 and 40 per cent of free carbon.

In applying the gravel and pitch care shall be taken that the pavers are closely followed by the filler gang, and in no case shall the paving be left over night (or when work is stopped) without the filler being completed. In case of rain stopping the filler gang before its work is finished the joints shall be protected by the use of tarpaulins or other means so as to keep out water, and under no circumstances shall the filler be poured into wet joints.

(B) Bituminous Asphalt Filler.—Immediately after the blocks are laid sufficient coarse, hot gravel shall be spread over the surface and swept into the joints so as to fill the space between the blocks to a depth of about one inch from the bottom.

The blocks shall then be rammed to thoroughly settle and compact the first layer of gravel in the joints and so as to leave no blocks above or below the general surface of the finished pavement.

The joints shall then be poured one-half full with a bituminous filler as hereinafter described and then filled to within ½ inch of the surface with hot gravel and again poured with the filler; this last pouring shall be flush with the surface of the blocks at the joints. This final pouring of the filler shall be immediately followed with a sufficient amount of hot gravel applied at the joints to cover the filler.

The gravel shall be clean, washed gravel, between ¼ and ½ inch in its largest dimension, not over 25 per cent of which shall be of ½ inch size.

The paving cement to be used in filling the joints between and around the paving blocks and bridge stones shall be a bituminous material, either natural or artificial, entirely free from coal tar or any product of coal tar distillation.

It shall be waterproof, free from water or decomposition products, shall adhere firmly to the paving stones, and shall remain ductile and pliable at all climatic temperatures to which it may be subjected in actual use, and shall not run in the joints in the hottest temperature of summer, nor become hard or brittle through the action of frost.

It shall conform with the following requirements:

Not less than 99 per cent by weight shall be soluble in carbon bisulphide.

Its specific gravity at 66° F. shall not be more than 1.00.

One hundred grams of this cement shall not lose more than 10 per cent weight upon being maintained at a uniform temperature of 400° F. for seven hours in a cylindrical vessel 3½ inches in diameter and 1 inch in height. Its amount of fixed carbon shall not be more than 12 per cent and it shall show a flashing point, with the open oil tester, of more than 510° F., and shall not contain more than 2½ per cent of paraffine scale.

If obtained by a mixture of bituminous materials it shall be a thorough homogeneous mixture free from water and light oils, obtained by agitation with hot air at a temperature of not more than 400° until all the mass is blended completely, and shall be entirely free from any granular accumulation.

At 32° F. with No. 2 needle and 100 grams weight during five seconds the penetration shall not be less than one millimeter.

At 115° F. with No. 2 needle and 50 grams weight during five seconds the penetration shall not be less than eight nor more than fifteen millimeters.

One-half gram of the material when made into a ball shall not melt and drip through an aperture one millimeter in diameter at less than 220° F.

The paving cement shall be heated on the work to a temperature of not less than 400° F., nor more than 450° F., in such quantities as will allow of this temperature being maintained in the kettle during progress of the pouring, and no cement the temperature of which is less than 400° F. shall be used.

It shall then be put into a conical can and poured into the joints as hereinbefore described.

It shall be delivered on the work at least one week before being used and in sufficient quantities to allow of suitable samples for examination and analysis, and such samples shall conform with the above requirements.

All the joints between the stones shall be filled with this hot paving cement, continuing the pouring until the joints are entirely filled, but no flushing of the pavement shall be permitted.

In applying the gravel and bitumen care shall be taken that the pavers are closely followed by the filler gang, and in no case shall the paving he left over night (or when work is stopped) without the filler being completed. In case of rain stopping the filler gang before its work is finished the joints shall be so protected by tarpaulin or other means as to keep out water, and under no circumstances shall the filler be poured into wet joints.

(C) Cement Grout Filler.—Immediately after the blocks are laid sufficient gravel shall be spread over the surface and swept into the joints so as to fill the space between the blocks to a depth of about one inch from the bottom.

The blocks shall then be rammed to thoroughly settle and compact this layer of gravel in the joints and so as to leave no blocks above or below the general surface of the finished pavement.

After the pavement has been brought to a uniform surface Portland cement grout shall be poured into the joints until it appears on the surface. The grout shall be broomed into the joints, if necessary, to fill the same, and the operation shall be continued as the grout settles until the joints are thoroughly filled flush with the surface of the blocks, immediately after which the entire pavement shall be broomed to a smooth surface, sufficient grout being applied to bring said surface even with the highest part of any of the blocks. The blocks shall be wet by sprinkling immediately before applying the grout if the condition of the atmosphere requires this precaution to be taken.

The cement grout shall be composed of one measure of the best quality of freshly burned Portland cement to one measure of clean, sharp sand. In the mixing of the cement and the sand clean, fresh water shall be used to give the proper consistency.

The grout shall be mixed for this purpose, either in a machine mixer to be approved by the engineer or in a box about 4 feet 8 inches long, 30 inches wide and 14 inches deep, resting on legs of different lengths, so that the mixture will readily flow to one corner of the box, the bottom of which shall be 6 inches above the pavement. The mixture shall be removed from this box to the street surface with scoop shovels, all the while being stirred in the box as the same is being emptied. One such box shall be provided for each ten feet in width of the roadway. The work of filling shall be carried forward until an advance of fifteen or twenty yards has been laid, when the same force and appliances shall be used to regrout the same space in a like manner, excepting that the proportion of the mixture for this second application shall be two parts of Portland cement to one part sand. The work shall be kept lightly sprinkled with water on the surface ahead of the sweepers by means of a sprinkling can or other suitable device to avoid the possibility of causing the grouting to become too thick at any point. To insure the penetration of the grout into the joints of the pavement there shall be used, in addition to the brooms, a squeegee scraper 15 to 18 inches in length on the last application of the grout.

Within one-half to three-quarters of an hour after the last coat has been applied and the grout between the joints has fully subsided, and the initial set is taking place, the whole surface shall be lightly sprinkled and all surplus mixture left on the top shall be swept into the joints, bringing them up flush and full. After the grouting is done and a sufficient time for hardening has elapsed, so that the coating of sand will not absorb any moisture from the cement mixture, one-half inch of sand shall be spread over the whole surface, and in case the work is subjected to a hot summer's sun an occasional sprinkling to dampen the sand shall be made for two or three days.

After the grouting is completed the streets shall be kept closed and no carting or traffic allowed until at least seven days have elapsed on any portion of the streets grouted, and the face of the pavement shall be kept moist if the condition of the weather requires this precaution, as may be directed by the engineer. Should the bond between the blocks become broken for any reason during the progress of the work the joints shall be cleaned out, even if it is necessary to take up and relay the blocks, and such parts so taken up and relaid shall be regrouted and rebarricaded.

NEWS OF THE MUNICIPALITIES

Current Subjects of General Interest, Under Consideration by City Councils and Department Heads—Streets, Water Works, Lighting and Sanitary Matters—Fire and Police Items—Government and Finance

ROADS AND PAVEMENTS

Will Use Oil on Unpaved Streets

Niagara Falls, Ont.—Merchants and residents living in the unpaved streets will not be bothered with dust the coming summer, it being decided by Works Committee of the Council to again use oil, as it has been found to give better results than water, and at a lower cost. City Clerk Seymour was instructed to obtain samples and estimates on the cost of street oil, and to report to the Council.

Mayor Favors Paving Plant

Portland, Ore.—Mayor Simon thinks the establishment of a municipal paving plant as contemplated under the proposed charter amendment to be submitted to the voters at the coming municipal election would result in great good. Not only could such a plant be used by the city in repairing old pavements, but he believes that many new pavements could be laid, and by competing with the private paving companies in this manner keep the cost of paving low.

Narrower Streets Find Much Favor

Los Angeles, Cal.—Narrower roadways on residence streets, as advocated for Los Angeles by W. M. Humphreys, inspector for the Board of Public Works, are finding much favor with citizens. The principal advantages of the plan claimed by Mr. Humphreys are that streets 25 feet wide or less are amply able to care for the usual traffic on residence thoroughfares, cost less to pave and maintain and afford better opportunities for planting trees and otherwise beautifying the parkways. The sidewalks are out to the curb line and the parkways are added to the lot area, without the municipality surrendering any rights. This method adds greatly to the appearance and privacy of residence property by throwing the residence farther from the traffic on the sidewalk. With the old way, six to eight feet of the street was lost in a cobblestone gutter, but with the smooth surface from curb to curb such gutters are not needed.

Will Use Oil on Park Roads

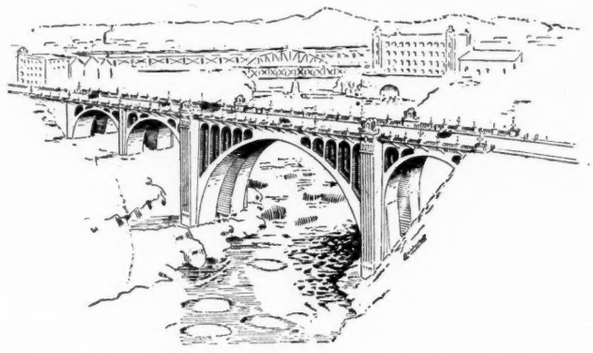
Cincinnati, O.—Water will no longer be used for sprinkling the park roads, as City Engineer Shipley is of the opinion that sprinkling is "medieval" as a method of getting rid of dust. His recommendation was concurred in by Director Sundmaker, and City Solicitor Ballard holds that the Service Director may provide that oil be used to keep down the dust.

Organized Plans for Repair of Roads

Los Angeles, Cal.—A repair force to look after keeping of the new good roads system and preventing damage to it will be immediately organized by the Board of Supervisors in conformity to recommendations by F. H. Joyner, Highway Maintenance Engineer. A motor truck for repairing the highways has been advertised for, and the force will be in charge of Oliver T. Georges, now a chauffeur for the county. Engineer Joyner's recommendations for the upkeep of the highway system are as follows: For the repair and maintenance of roads constructed by the Los Angeles County Highway Commission, it appears best to have two organizations—one to take care of the small repairs, such as patching macadam and shoulders, maintaining small waterways, slopes, etc., and the other to do the larger repairs, such as a general oiling, sanding or resurfacing of the roads and also the rebuilding of certain sections of roads where this method of treatment seems to be necessary. These two organizations had best be started in a small way and as a nucleus around which can be built a force and equipment necessary to properly and economically maintain all the highways the county may construct.

Rapid Progress on Bridge Built by Day Labor

Spokane, Wash.—Work is being rushed on the new Monroe street bridge, which City Engineer Macartney is building by day labor and expects to have completed this summer. The illustration shows the structure as it will look from the west when completed. The falsework for the main span is now being erected. The bridge is estimated to cost about $500,000.



CONCRETE BRIDGE UNDER CONSTRUCTION BY DAY LABOR

Improving Towns' Streets

Hartford, Ala.—The Town Council is having all the main streets of town graded and prepared with a hard clay surface which will add materially to the beauty and convenience of the town.

Make Property Owners Pay for Paving

Toledo, O.—By a tie vote Council Committee on Public Improvements last week refused to approve the proposition to have the city pay 25 per cent of the cost of improving University Boulevard in Harvard Terrace. The city accepted the central parkway on the boulevard, and Service Director Cowell was of the opinion that this obligated the city to pay half the cost of the abutting macadam pavement. Assistant City Solicitor Duer expressed the opinion that the whole cost can be assessed to the property owners, the city to pay for the curb line along the parkway.

For Road Improvements

San Antonio, Tex.—For the purpose of raising money for keeping up the county roads and building new ones the County Commissioners are considering the feasibility of placing a slight increase on all property valuations in the county and thus with the same old rate accomplishing the purpose of getting larger revenues. Whatever sum is realized over and above the budget allowance can be transferred from the general fund to the road and bridge fund and the roads in the county thus given more attention. With the increase in the use of automobiles the demand for good roads is imperative.

Oil Will Be Used on Streets

Norwich, Conn.—It has been decided that the use of water on the streets will be curtailed this year as it was last and that oil, which proved so effective in keeping down the dust, will again be used on all but the block and brick pavement, which cover but a small section of the city. After the streets have been oiled early in May they will be oiled again in August, which it is thought will carry them through the season and keep the dust down. It is probable it will take 24 tank cars and the cost will be practically as much as by the use of the water, but it has proved more satisfactory and millions of gallons of water are saved.

SEWERAGE AND SANITATION

Town to Have Sewer System

Attalla, Ala.—Wilburn Hill, who has been connected with Hazleton and Anderson, engineers of Atlanta, will have charge of the laying of the sewer system of the city of Attalla. The work will be commenced almost immediately and will be completed within two or three months. The rapid growth of Attalla has made the sewer system necessary in order to preserve the health of the town.

Health Department Urges Reforms

Duluth, Minn.—A recent bulletin issued by the Health Department deals with a wide variety of subjects and urges many reforms and improvements. Among the recommendations made are the following: Push the lodging house ordinance; insist upon sanitary delivery of bread; boost municipal collection of garbage; war against the fly; individual towels in public schools; individual towels and sanitary drinking fountains in public buildings.

Sanitary Drinking Fountains in Schools

Woonsocket, R. I.—Sanitary drinking fountains are to be installed in the public schools of the city, arrangements having been made for the work by the property committee of the school committee. Between 80 and 90 fountains will be installed, with at least one in every building. This improvement in behalf of the health of school children follows the vigorous plea made for fountains as preventives of scarlet fever and diphtheria by Joseph T. Roswell.

Bar Sewage from Channel

Toledo, Ohio.—The city has been asked to take steps toward the protection of the channel of the Maumee River in the vicinity of the new city water works by preventing sewage and other material from going into the river at this point in a letter received by Mayor Whitlock from the United States Engineer's office at Cleveland. It is pointed out that an investigation of conditions was made by the local inspector, following complaints received recently, and that delay in correcting the injury to the channel, already produced, may result in damage to the channel at other points. The matter was referred to Service Director Cowell, who will take action.

Citizens Hastily Build Road to Frustrate Sewer Plans

Plainfield, N. J.—In disregard of the Sunday laws, the Citizens' Committee of Bound Brook, with a gang comprising 46 laborers, assisted by a number of property owners, worked all day opening up the new road through North Plainfield township, whereby they hope to defeat the borough's plans of locating sewage disposal beds on the Zvolnck farm. Henry G. Opdycke, chairman of the committee, himself an engineer, directed the operations, which attracted a large number of spectators from Bound Brook and the surrounding towns. It was an interesting sight to witness the property owners working alongside of the laborers, but they were so anxious to push the improvement that the social inequality cut no figure. During the day bridges were built, drains placed in position and trees were cut down. The new road has several angles to it and it is doubted very much whether the Board of Freeholders will accept the thoroughfare. A prominent citizen of the borough, in speaking of the project, said that any one can see the purpose for which the road was built; that the original stakes have not been followed and that it is plain to all that it was opened to block the sewer scheme. In view of these facts, it is the opinion of North Plainfielders that neither the State Board of Health nor the courts will sustain Bound Brook. The improvement is being paid for by the property owners, who have also given the right of way for the thoroughfare. Mr. Opdycke says that the townships of Bridgewater, Warren and Piscataway, the Bound Brook Council and Board of Trade are organized under the head of the Citizens' Committee and will go the limit to defeat the sewer scheme. The State Board of Health will meet to-morrow, when it is expected that a decision favorable to North Plainfield will be given and the borough will then go ahead with its project, condemning the land needed for sewage disposal beds.

WATER SUPPLY

Consulting Chemist Finds City's Water Pure

Bangor, Me.—Prof. J. M. Caird, of Troy, N. Y., who is engaged as consulting chemist by the Water Department of the city of Bangor, has submitted his annual report on the city's water supply. Much of the document is given to tables and results of analyses made from time to time. He speaks in the highest terms of the new filter plant, and closes his report with the statement that Bangor has the best water supply in the State.

Increasing Capacity of Reservoir

Ogden, Utah.—Work has been commenced concreting the old city reservoir and increasing its capacity. The Moran Construction Company has a large force of men engaged in deepening and widening the big receptacle, so that it will conform in sanitary perfection with the new reservoir No. 2. The capacity of the reservoir will be increased nearly 2,000,000 gallons. Its present capacity is a little over 5,000,000 gallons, but by deepening it about four feet and widening it by extending the sides 30 feet outward a capacity will be gained of 7,000,000 gallons.

Town Drills Wells for Pure Water

Moorhead, N. D.—The new well which the city has just finished is only the beginning of a plan that has been adopted by the Moorhead City Council for giving the people of the city the best water available in their mains. The engineers who have gone over the ground declare that at the depth of the present well lies an underground lake which is large in its extent and will furnish the city consumers with the best and purest water that could be wished for. The present well is 12 inches in diameter inside its casing and is the first of a series of test wells which, if it proves a success, will be drilled. It is the plan of the city to fill the city water mains with this water, thus cutting out the supply from the river. The plan also includes a large reservoir up the river, which will be turned into the city mains in case of extreme necessity.

Gorge Dammed for Pure Water

Lawton, Okla.—In a narrow gorge of the Wichita Mountains, 14 miles distant, the city of Lawton is building of granite and cement a dam which will impound a supply of water for municipal purposes unexcelled for purity and clearness. This water will come from the watershed of the Wichita National Forest reserve into Medicine Creek, a mountain stream, and thence to the reservoir basin, without the slightest chance of pollution. The drainage area embraces 150 square miles, in which there is not a town nor a homestead. For all time there will be a water supply far in excess of the needs of a city four or five times the size of Lawton. The reservoir is 12 miles from town by pipe line, and the base of the dam 115 feet above the highest point in Lawton, where the average pressure will be about 90 pounds to the square inch. The plant is one of magnitude, but its construction is attended with few serious engineering problems. The location for the dam was chosen at a point where Medicine Creek barely squeezes its way through a cleft in the Wichitas. United States Army engineers at Fort Sill were asked to apply their knowledge to the situation. They drilled to a depth of 30 feet in the foundation, made estimates of the amount of water that would flow from the watershed and of the amount that could be impounded by the proposed dam, after which they approved the undertaking. For basin purposes 2,200 acres of land were purchased, the land touching the forest reserve. The present capacity of the reservoir will be 16,000 feet, equivalent to a foot of water on 16,000 acres, or a total of 5,500,000,000 gallons. The actual water area will be about 1,200 acres, with an average depth of 14 feet. The runoff of the watershed is estimated at 1,632,000 acre feet a year, a supply sufficient for a town with a population of 160,000, after deducting all wastage. Without a drop of rainfall a full reservoir would serve a town of 20,000 inhabitants for three and a half years, allowing 100 gallons per capita every 24 hours. The cost of construction is covered by a city bond issue. The contractors have been at work about seven months, and it is expected the work will be finished in July.

Town Improves Water System

Phoenix, Ariz.—Superintendent Avery Thompson of the city water department, assisted by Engineer Frank J. Ambull of Los Angeles, submitted the new pump installed at the city plant to a series of tests, found it satisfactory and recommended its acceptance.

Canadians Inspect Our Water Works

Toledo, Ohio.—Superintendent Wisler of the municipal water works has received word that a commission from Toronto, Canada, would visit Toledo to secure information regarding water intakes.

Sandbar in River Endangers City's Water Supply

La Crosse, Wis.—Unless one of the vagaries of the upper Mississippi's current sweeps away the sandbar that has formed over the mouth of a 24-inch intake pipe that supplies this city with water it will be necessary to move the pipe in about 30 feet. Expert divers have examined the river bed and report that the city may soon be without a water supply.

Advocate Free Water for Factories

Fort Worth, Tex.—Free water for Fort Worth factories for a term of 10 years—that is the text of a recommendation sent to the City Commission by Mayor Davis, who suggests that the city adopt the slogan of the Board of Trade, "We're for Smoke," and assist in making Fort Worth the greatest manufacturing center in the Southwest. According to the plan outlined the free water is to begin when the big $1,350,000 reservoir is in operation. This will probably be in the fall of 1912, when Fort Worth will be able to boast of the largest supply of water of any city in the South.

Water Supply the Problem

Elizabeth, N. J.—The finding of a water supply is the puzzle that now confronts the Elizabeth committee on a municipal water plant. Men who are the most anxious that such a plant be secured, and who declare that Elizabeth and every other city should own its own water plant, shake their heads in doubt when asked where a water supply is to be obtained. It is pointed out that the Elizabethtown Water Company, already long in the water business, is having difficulty in getting enough water, although it has several good sources at its command. This company intends to tap the springs and water sources away up in Ridgewood, so that this municipality will not suffer a water famine.

City Commission Personally Investigates Water Situation

Moline, Ill.—A peep into the "water problem" was taken last week by the City Commission, which visited the water works plant in a body and spent an hour viewing the filter beds, inspecting the boilers and hearing explanations from Engineer Magnus Olson. During the informal discussion that was carried on during the inspection tour water meters were suggested as a solution of the problem before the new Council. The Commissioners—or some of them at least—admitted water meters have their good points, but it was pointed out that installation of the meters would result in great opposition.

Helena Will Hold Water Bond Sale

Helena, Mont.—Three courts having rendered decisions affecting the right of the city of Helena to sell $600,000 of water bonds, the city will proceed with the sale. The most important decision was that rendered by United States Judge Gilbert, at Portland, in the application of Receiver C. E. Bockus of the Helena Water Works Company, for an injunction to prevent the city from selling the bonds and installing a municipal water plant. This case was heard in Portland by reason of the fact that Federal Judge Carl Rasch, of this district, was formerly attorney for the water company and was disqualified. The city officials declare that the victories won mean the end of the long legal fight which has been waged between the city and the water company for the past 15 years. The receiver for the Helena Waterworks Company has announced that he would offer the plant to the city for $400,000, to be paid for by 20-year 5 per cent. bonds. This price is $190,000 less than an offer made by the company a month ago.

STREET LIGHTING AND POWER

City's Lights Famed

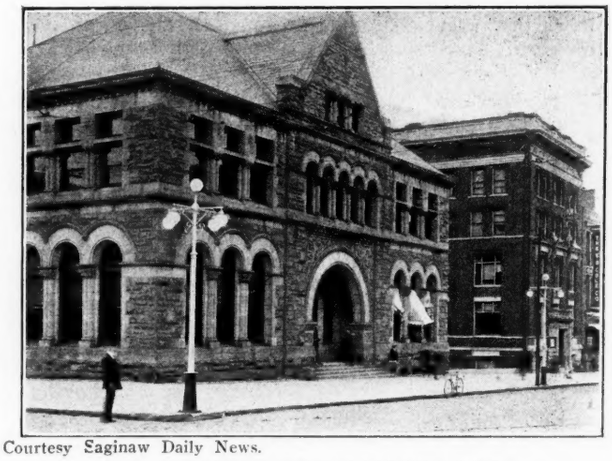
Baltimore, Md.—Boston City Councilmen will visit this city within the next ten days to inspect the lighting system. They will also study the local method of disposing of garbage. Boston is about to renew a contract involving the expenditure of several millions for lighting the streets. Walter Collins, President of the Council, is quoted as saying that aside from Milwaukee, Baltimore is the best lighted city in the world.

New Lighting System

Washington, D. C.—Work of installing the new lighting system in Vermont avenue, Connecticut avenue, Massachusetts avenue, Lafayette Square and Seventeenth street was commenced last week. Some street repairs have been planned, which will necessitate the tearing up of part of the pavement in front of the White House, and the lighting company planned to take advantage of that to begin the work of installing its cables.

Committee Reports on Lighting System

Lansing, Mich.—The committee of the Saginaw Board of Trade, which recently visited Lansing, has reported to the board that Lansing has 320 electroliers or poles bearing one, three and five light clusters of tungsten burners. The cost last year of a total of 803 separate lights and clusters,



Courtesy Saginaw Daily News.

5-LIGHT STANDARD USED AT LANSING, MICH.

or a total of 1,503 lights, was $22,000. The current is furnished by a municipal plant which now has $40,000 in the bank to its credit. As a rule five-light clusters are placed at the corners of streets and three-light clusters in the intervening space. The standards are made by the Michigan Brass and Iron Works, a local manufacturer.

Novel Concrete Lamp Posts Placed in Park

Pasadena, Cal.—The city lighting department has just completed installing fourteen concrete lamp posts in Library Park. These lamp posts are unique in that the base being separate is set first and the tapering columns are afterward cemented into same. Building them in two pieces greatly reduces the first cost as well as effecting a great saving in transportation. All the wire connections are underground, and work of erection as well as design of holder for the ground-glass globes was done by the municipal lighting plant.

New Electrical Plant Rises in Record Time

Cleveland, O.—The Cleveland Electric Illuminating Company expects to have the first unit in its new plant at the foot of East Seventy-first street in operation between July 15 and 20. The entire plant of six units will be completed before September 1. Each unit will supply 14,000 kilowatts. The plant, which will be one of the largest and finest of its kind in the country, is being built more rapidly than any similar institution ever erected. Structural work was started last December and brick work on February 22. The plant will cost in the neighborhood of $2,500,000. "It has been designed to take care of Cleveland and Cleveland's growth," General Superintendent Robert Lindsay states.

FIRE AND POLICE

Auto Fire Truck Tried

Milwaukee, Wis.—A modern auto fire truck which was tried out one day last week is to be given 30 days' trial in Milwaukee, and if it proves satisfactory to the department will be recommended to the Common Council for purchase. The powerful red machine, a combination chemical truck and hose cart, carries 1,000 feet of hose, 250 feet of chemical hose, a chemical tank holding 30 gallons and 7 men.

Auto Engine Kills Two

Passaic, N. J.—One of the Passaic Fire Department's automobile fire apparatus skidded and crashed into an iron trolley line pole one night last week, wrecking the machine and killing two men. The dead are Charles F. Cowley, secretary to the Passaic Board of Education, and Lieutenant James A. Delaney, of the Fire Department.

Auto Chemical Engine Found Economical

Middletown, Conn.—In a recent report of the Fire Chief as to his department the statement was made that from April 15, 1910, to April 15, 1911, the actual expense of Middletown's combination auto-chemical was exactly $39.61. The year before the auto was purchased the expense of maintaining a pair of horses on Hose 1's wagon was $350.02, leaving the snug balance of $310.41 in favor of the auto.

New Signal System

Buffalo, N. Y.—The new police signal system has been put into operation at the Pearl street station, and was operated throughout the precinct, being watched by Inspector Martin and Captain Gilligan, who pronounced it successful. It consists of a number of call boxes on each man's post attached to telegraph poles. Above the box is a red light used to call men to the box. A bell will ring in the daytime to notify men they are wanted at the box.

Motor Fire Apparatus Installed

Lansing, Mich.—The new motor fire engine apparatus has been installed in Central Fire Station, where it is ready for future emergencies.

More Police Equipment

Alexandria, Ind.—In addition to the Luger automatic pistols which the city recently purchased to arm the police force another supply of police paraphernalia, in the way of maces and handcuffs, has been received. This makes the equipment of the department first class in every respect, and as the officers have recently donned their new summer weight uniforms the force is in excellent condition.

Fire Truck for Racine

Racine, Wis.—Racine's first automobile fire truck arrived last week from New York in charge of an expert, who will teach the fire fighters how to run the $5,000 machine.

Fire Loss Is Small

Richmond, Ind.—Because of the efficiency of the Richmond Fire Department the Board of Works will make an effort to have lowered the insurance rates as assessed by companies doing business here. The city's fire loss in the last three years has been far below that of other cities in the State where the fire insurance rates are the same in comparison with those effective here, and the city officials believe that property owners are entitled to a lower premium because of these facts. The total fire loss in 1910 was less than $4,000, in 1909 less than $7,000 and in 1908 about $50,000. The city regularly employs 30 firemen and has a reserve of equally as many more.

Expect Auto Fire Apparatus Will Lower Insurance Rates

Great Falls, Mont.—A demonstration of the auto chemical and hose wagon was given last week before J. H. Branscomb, district secretary of the Board of Fire Underwriters of the Pacific. The apparatus was bought in accordance with the recommendation made by him in 1909, which recommendation was also embodied in the report made by engineers of the National Board of Fire Underwriters last year. A re-inspection of property coming under the protection of the Great Falls department is now being made for the purpose of ascertaining if a lower rate of fire insurance may be established here.

GOVERNMENT AND FINANCE

Mayor Elected by Close Margin

Norfolk, Neb.—At the biennial city election held on April 4 Mayor John Friday was re-elected by a majority of one vote out of a total of 1,151 votes cast.

Plans for National Municipal Accounting Bureau

New York, N. Y.—The Bureau of Municipal Research announces that it has engaged U. L. Leonhauser as accountant for the national fund established by ex-Comptroller Metz for "promoting efficient municipal accounting and reporting." Mr. Leonhauser will have charge of the co-operative investigations conducted with the City Comptrollers and Mayors of other cities by that fund, and of the correspondence which Mr. Metz hopes will "make available to American cities the best principles and practice worked out in municipal accounting and reporting." With him will be associated George L. Bergen.

Women Not Allowed to Vote May Invalidate Election

Traverse City, Mich.—According to a ruling made by Assistant City Attorney Higbee, of Grand Rapids, the recent city election in Traverse City may be entirely invalidated and all because the female voters there were accidentally disfranchised. It developed that in Traverse City the school office candidates were placed upon the regular city ballot and no separate ballot for the women was supplied. Naturally the women could not vote for any but the school officers, and so were not allowed to vote at all. In Grand Rapids the charter distinctly provides that separate ballots must be prepared for the women who wish to vote at school elections or upon bonding propositions, but the provision merely carries out the broader provisions of the State law. The authorities of Traverse City decided they would not prepare special ballots for the women because there was no specific charter provision requiring it. Therefore Traverse City women were denied a vote, while in Grand Rapids, Detroit and elsewhere women were allowed to vote for school trustees.

Commission Government Elections

Winston-Salem, N. C.—Commission form of government for the city of Winston was defeated by a majority of 106.

Montgomery, Ala.—Two of Alabama's chief cities have dropped the Aldermanic form of municipal administration for a system of commission government. In Birmingham three City Commissioners were sworn. Mayor Culpepper Exum is one of the Commission. Montgomery has five Commissioners appointed by the Governor. Mayor W. A. Gunter, Jr., is one of them.

Taylor, Tex.—The election on the special city charter enacted by the recent Legislature providing for a commission form of government for Taylor resulted in its rejection by a vote of 290 to 357, a majority of 67 votes against the measure. A total of 647 votes were polled.

Marshalltown, Iowa.—This city has passed from under the old municipal form of government with a Mayor and seven Councilmen to the commission form. Mayor Jones and Councilman Herman were installed, the seat of Councilman Derby being contested.

Faribault, Minn.—The commission form of government was chosen here by an overwhelming majority at a recent election.

Parkersburg, W. Va.—At a special election called for the purpose the voters of Parkersburg adopted a new charter providing for the commission form of government, the initiative, referendum and recall. The vote was 1,831 for the new charter and 1,622 against it.

Paola, Kan.—Commission form of government lost in Paola at a recent election by 24 votes.

Raleigh, N. C.—Raleigh voters defeated the commission form of government by a vote of 886 to 437, only one ward, the second, having given the majority for the measure provided by the recent Legislature and subject to adoption by the people of Raleigh.

STREET CLEANING AND REFUSE DISPOSAL

Garbage Reduction Plant Ready for Use

Bridgeport, Conn.—The work of rebuilding the garbage plant has been practically completed, and the owner, Charles Fischer, expects to begin receiving garbage for reduction next week. Four digesters have been installed so that the capacity of the plant will be 60 tons of garbage during every eight hours. The Mayor and members of the Board of Health will thoroughly inspect the plant before it is opened. Practically the entire equipment of old apparatus has been discarded.

Engineer to Inspect Electrolytic Disposal

Atlanta, Ga.—For the purpose of sending an engineer to examine and inspect the electrolytic sewage disposal plant recently installed at Oklahoma City, Okla., City Council last week adopted a resolution appropriating $100. W. A. Hansel, the engineer in the Chief of Construction's office, who has charge of the bond issue work, will be the man to go at the city's expense. He is a competent engineer and a thoroughly reliable expert, and whatever he brings back the City Council will be willing to accept as authoritative.

Tests Being Made with Uniform Pressure Street Flusher

Peoria, Ill.—Projecting a long blade-like stream of water from a front nozzle on either side, a new device known as the Studebaker uniform pressure street flusher, is being given a series of tests on the downtown streets under the direction of the Commissioner of Public Works. The thin blade of water sweeps over the surface like a broom, throwing the dirt toward the curb and leaving the pavement as clean as if it had been scrubbed by hand. The flusher, when loaded, weighs 11,460 pounds, and the cost of the machine is $1,000. Thus far the tests made have been eminently satisfactory.

Cost of Operating Crematory Greatly Reduced

Tampa, Fla.—The report for the second month's operation of the garbage crematory has been issued. The first month's operation gave a cost of $0.405 per ton, the second $0.231. The material consumed totaled 1,267.2 tons, or 3,168 loads, an average of 47 tons a day.

Street Sprinkling in Utica

Utica, N. Y.—In some cities contracts are let for sprinkling the streets to lay the dust during that portion of the year when such service is desirable, and in former years the business men of Utica had an arrangement by which the principal business streets were sprinkled. Of late, however, the only street sprinkling done in this city is that which the Utica Sweeping and Contracting Company does in connection with the regular work of sweeping. The city has an agreement with the company that whenever sprinkling is needed to keep the dust down prior to sweeping the streets the company is to do it. The company has had its sprinklers in use for some time.

Midnight Refuse Removal

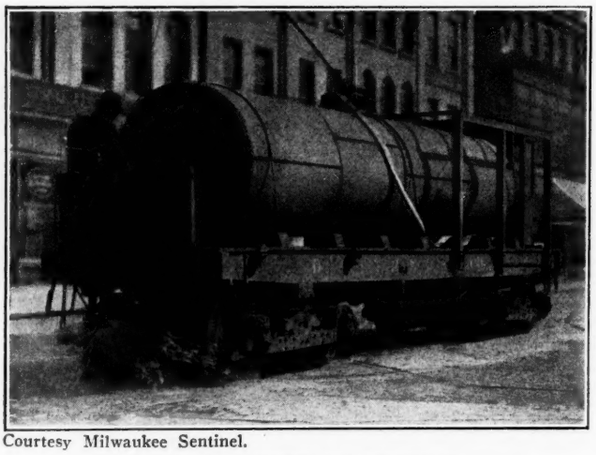
New York, N. Y.—Street Cleaning Commissioner Edwards has announced that he is going to try the experiment of removing ashes and garbage in the night. The test will be made in Manhattan, Brooklyn and the Bronx. Mr. Edwards says it is the intention of the department to give this method a careful tryout, and the instructions are, if possible, to make it a success. It is believed that this method will lead to the use of vehicles which will better accommodate the collection than those at present in use—that is, trucks of larger capacity, manned by three men instead of one and drawn by three horses.

Oil and Water Sprinkler Purchased by Citizens

Texarkana, Ark.—The combination oil and water sprinkler recently purchased by public spirited men of the East Side has arrived, been put together and is in readiness. The tank has a capacity of 600 gallons, and when filled the apparatus will weigh something more than four tons. The machine is strongly built, and is equipped with wheels having tires 4¼ inches wide, which are expected to be a benefit to the streets.

Home-Made Trolley Sprinkler

Milwaukee, Wis.—Pending the arrival of eight new trolley street sprinklers the Milwaukee Electric Railway and Light Company rigged up a home-made affair. The machine made good beyond expectations. The apparatus consisted merely of a horizontal cylindrical tank mounted on a platform car with proper pipe connections and an ordinary sprinkling valve at the rear.



Courtesy Milwaukee Sentinel.

HOME-MADE STREET CAR SPRINKLER

New Plan for Garbage Disposal

Cleveland, O.—A revolution in the system of handling garbage at the municipal reduction plant may result, if experiments now being conducted work out as expected. The system of cooking the portion of the garbage left after the grease has been extracted and selling it as fertilizer will be abolished should the scheme prove successful. Instead of expending power in the manufacture of the fertilizer, this portion of the garbage will be sold as horse feed after a certain mixing process is followed. The material will be used in the city's own stables and will be sold to other horse owners as well. "The city has 350 horses," said Director Lea recently. "The feed bill is something like $100 a day. It is the cooking of the garbage after the grease has been extracted that causes the smell. If a new system is adopted there will be no odor at the plant. In addition the power cost will be reduced. The cost of power at the present time is $2,000 a month."

New System of Street Cleaning Will Be Tried

Rochester, N. Y.—Announcement has been made by Commissioner of Public Works F. T. Elwood that the flushing of the thoroughfares in the central part of the city and the streets near the entrances to the parks will be commenced by the city employees the latter part of next week. It is expected that the winter's accumulation of dirt and debris will have been disposed of by the contractors on the sweeping and cleaning of the streets by the middle of the week. Owing to the long winter an unusually large amount of dirt and debris had accumulated on the streets. After the general cleaning now in progress the contractors will be held responsible for the condition of the thoroughfares and will begin to do the cleaning and sweeping under the new system inaugurated by Commissioner Elwood. There will be 123 men and carts employed on the work, a certain amount of street space being assigned to each cleaner, who will be held responsible for its condition by the contractor. The cleaners on the downtown streets, where the traffic is heaviest, will necessarily have less ground to cover than those detailed to work on the outlying streets. Instead of leaving piles of dirt on the streets as has heretofore been the custom, the cleaners will be required to dispose of their refuse in their little black carts. In the past the dirt piles were allowed to stand until night, when the refuse was removed in wagons. Pending the arrival of the wagons the refuse was frequently blown all over the streets by the wind.

RAPID TRANSIT

Street Cars for Emporia

Emporia, Kan.—Emporia is going to have street cars, the franchise carrying by a majority of more than 500 in the city election. The franchise also carries with it the leasing of the municipal light plant to a Dayton syndicate. There was a strong fight against leasing the plant, but municipal ownership has proven a failure and the citizens voted for the franchise, hoping that the street cars will prove a benefit to the city. The provisions of the contract call for the payment of 5 per cent interest on the valuation of the plant by the Dayton syndicate. The plant has been valued at $68,000. The franchise gives the syndicate the privilege of operating a car line and the plant for 20 years and fixes the rates to be charged for electricity.

Street Railway Company Gets Two Franchises

Salt Lake City, Utah.—The city has granted a franchise allowing the Utah Light and Railway Company to extend its line on Eleventh East from Twelfth South in a southeasterly direction to the city limits. The county has granted a franchise for a continuation of this line on to Holiday and an extension of the West Temple line from Tenth to Twelfth South streets. It is the intention of the company to complete both extensions during the present year.

Trolley Franchise Granted

Chester, Pa.—The ordinance adopted by the Lansdowne Borough Council several weeks ago, giving the Terminal Street Railway Company the right to build a trolley line through the borough to connect with the Lansdowne and Darby "short line," has been approved by Burgess Carscaddon. The franchise calls for swift and businesslike action in construction. If the corporation accepts it and lives up to the terms laid down Lansdowne will have direct access to the city by way of the Market street "L" within nine months. If the company does not begin construction wtihin three months the franchise will lapse.

MISCELLANEOUS

Cities to Build Conduits

Columbus, O.—A bill by Representative Reynolds of Columbus, introduced in the House, proposes to give cities power to build conduits and compel the burying of corporation wires. Representative Donson introduced a measure to make more rigid requirements for the erection of fire escapes on mercantile buildings. The bill is taken from the general code prepared by the State Board of Health, State Fire Marshal and State Factory Inspector.

Segregation Ordinance Adopted

Newport News, Va.—The Board of Aldermen last week adopted the so-called "dead line" ordinance fixing a line in East End for the separation of the white and negro residential sections. The measure provides that hereafter no white person may move into the section bounded by the "dead line" and no negroes may hereafter move into the white section.

Citizen Donates Playground

San Antonio, Tex.—A public playground one mile long, 200 feet wide for its entire length, bordered on each side with four rows of shade trees, containing many beautiful flower beds, a long swimming pool in the center, with two bath houses, will be deeded in perpetuity to the people of San Antonio by F. F. Collins. This announcement was made by Mr. Collins, a director in the Civic Improvement League. Collins Gardens, where the playground is being laid out, is a famous show place with its wonderful artesian wells and highly productive 10 and 20-acre truck farms. The beauty of the landscape will be continued and added to in the playground at an expense of $50,000 by Mr. Collins. He has been quietly proceeding with his plan for some time, having had landscape gardeners at work, walks laid out, plans for miniature lakes and swimming pool all completed.

City Considers Underwriting Own Insurance

Scranton, Pa.—A resolution has been adopted by the Common Council providing that a committee of six, three from each branch of Council, be appointed to consider legislation for the creation of a sinking fund to be substituted for the present system of fire insurance for city buildings. The city averages in three years in the neighborhood of $5,000 in fire insurance premiums. The payments generally are $1,000 a year for two years and $2,000 for the third year.

Stock Park Lakes with Fish

Fort Worth, Tex.—Superintendent Vennedge has made a requisition on the United States fish hatchery at San Marcos for fish to stock the ponds at Marine and Trinity parks. The lake at the former park has an 8,000,000-gallon capacity and it is well filled with water. The Trinity Pond is of 1,500,000 gallons capacity. The allotment of fish will be in proportion to the capacity of the ponds or lakes.

Planting a Thousand Trees Along Streets

Syracuse, N. Y.—More than 1,000 shade trees will be planted along the city streets this spring under the direction of the Bureau of Parks. Hundreds of applications for trees have been made by property owners, and where possible they will be complied with. The chief varieties are American elm and soft maple, which are regarded the most hardy and practical for street purposes. More ornamental kinds are used for parks and lawns. Poplars are not permitted because of the lint they shed, and the fact that their long roots penetrate sewer pipe connections, causing obstruction and damages. Lindens and basswoods are used to some extent. The Bureau of Parks is keeping a close watch for pests which attack park and shade trees. The tussock moth is regarded as the worst to deal with, but it will be some weeks before the larvæ appear. Many of the cocoons are now on the tree trunks in different parts of the city, and it is planned to destroy as many as possible before they develop.

City to Have Department of Automobiles.

Spokane, Wash.—A new city department will be created to be known as the "Department of Automobiles" and probably placed under Commissioner D. C. Coats. To solve the problem of maintaining and caring for the machines of the various departments the City Commissioners have requested Commissioner Fairley and the Corporation Counsel to prepare an ordinance for passage creating the department mentioned. While the city has its own garage and mechanic in charge, there is no way of taking care of the salaries of chauffeurs, bills for supplies, etc., except for each department to take care of these expenses out of the department funds.

Pass Ordinance as to Theaters

Janesville, Wis.—Janesville's new theater ordinance, drawn up by the City Attorney, was given its third reading last night and placed on passage by a unanimous vote of all the Aldermen. The principal features of the ordinance are against the crowding of theaters and allowing people to stand in the aisles and entrances; it requires each place to have a fireproof room provided for the motion picture machinery, sheathed with galvanized iron and asbestos lined.

Systematic Plan to Beautify City Will Be Carried Out

Houston, Tex.—A new policy involving a systematic plan for beautifying Houston has been announced by the Chamber of Commerce co-operating with the city through Mayor Rice. It involves the appropriation and expenditure of sufficient funds to obtain results desired. The work is to be done with absolute system, having in view a definite purpose. F. H. Pottinger has been employed to take charge of the work and will rank as the Chief Forester of Houston. He will have an office in the rooms of the Chamber of Commerce, and his services will be available to the public. A committee from the Chamber of Commerce called on Mayor Rice in regard to the proposed plans of beautification, especially the work dealing with the ship channel. At the conclusion of the conference he pledged the city to appropriate half of whatever fund may be necessary in the work of bayou beautification. It is estimated by Secretary Boldt of the Chamber of Commerce that $10,000 will be adequate for the bayou work.

LEGAL NEWS

A Summary and Notes of Recent Decisions—Rulings of Interest to Municipalities

Sidewalk Obstructions—Injuries—Instructions

City of Harrodsburg vs. Sallee.—In an action for injuries to a pedestrian who stumbled over an obstruction on a sidewalk the court charged that if the obstruction had been there an unreasonable length of time, and the municipal authorities knew or might have known by reasonable diligence of the existence of the obstruction, and it was of a form and character ordinarily calculated to cause persons walking and exercising reasonable watchfulness for their own safety to stumble and fall, and plaintiff was reasonably watchful for her own safety, the verdict should be for plaintiff, otherwise for defendant. Held, that the instruction was not erroneous as failing to present defendant's theory of contributory negligence.—Court of Appeals of Kentucky, 130 S. W. R., 405.

Removal of Policeman—Compensation

Kammerer vs. City of Louisville.—Where a policeman is dismissed, without charges being preferred, and without notice and a trial, the city is liable for his salary until the entire number of policemen authorized has been appointed, without a determination of the rightfulness of his dismissal; but when the full complement is appointed, the right of such policeman to recover his salary ceases until he establishes his title to the office in a direct action.—Court of Appeals of Kentucky, 135 S. W. R., 411.

Franchises—Indeterminate Permit

City of La Crosse vs. La Crosse Gas and Electric Company.—The feature of the public utility law rendering non-enforceable existing contracts relating to any charge of service regulated thereby in case of conversion of an old into a new franchise by a surrender of the former, by necessary implication, renders non-enforceable obligations of the corporation incurred as a condition of the old franchise and substitutes therefor the obligations and conditions of such law.—Supreme Court of Wisconsin, 130 N. W. R., 530.

Bonds—Municipal Purposes

Brown vs. City of Lakeland et al.—The power given the Legislature to prescribe the "powers" of municipalities and to authorize cities and towns to assess and impose taxes for "municipal purposes" does not permit the giving to municipalities as such authority to issue bonds and to levy a municipal tax to pay the bonds, when the proceeds are to be used "for the purpose of erecting schoolhouses and maintaining a system of public education in the municipality."—Supreme Court of Florida, 54 S. R., 716.

Ordinances—Prosecution—Appeal

McKinstry vs. City of Tuscaloosa.—While one accused of a violation of a municipal ordinance is entitled in the municipal court to be apprised by written complaint of the nature and character of the proceeding instituted against him, he by proceeding to trial without demanding in such court such a complaint waives the right thereto; and cannot for the first time avail of it on appeal.—Supreme Court of Alabama, 54 S. R., 629.

Validity of Tax—Presumptions

Hanley vs. City of Elkins.—In order to entitle a plaintiff to recover from a municipality a tax alleged to have been levied by it without authority of law and paid under compulsion, he must prove that the tax was illegal and void. If it appears from the charter of such municipality that it had the right in any event to levy the tax which is sought to be recovered, it will be presumed, in the absence of proof, that the tax was lawful.—Supreme Court of Appeals of West Virginia, 70 S. E. R., 698.

Sewer Ordinance—Compliance with Statute.

Platt vs. City of Payette.—Revised Codes, providing for what shall be contained in an ordinance giving notice of intention to construct a sewer system, must be liberally construed, and a substantial compliance with the provisions of the statute is all that is required of the council, in view of the fact that its passage constitutes merely a preliminary step leading up to the final issue of the bonds, in case the voters should decide at the special election in favor of such improvement being undertaken.—Supreme Court of Idaho, 114 P. R., 25.

Sidewalk Obstructions—Snow and Ice.

Schneider vs. City of New York.—A municipality is liable to persons who, without negligence on their part, are injured through its failure to remove obstructions from a sidewalk, including snow and ice, but need not do what is practically impossible to avoid accidents. The city of New York was not negligent in failing to remove snow and ice from the sidewalk on which a pedestrian was injured, where scarcely twenty-four hours had elapsed since the obstruction accumulated; the city being entitled to wait a reasonable time for freezing weather to moderate.—New York Supreme Court, 128 N. Y. S., 45.

Defective Sidewalk—Liability.

McCoy vs. City of Utica.—That a pedestrian is injured by some slight defect in a street from which danger was not reasonably to be foreseen, e. g., a depression in a sidewalk to the depth of the thickness of surrounding flagging, right-triangular in shape with base and sides about two feet long, caused by the removal of a broken piece, does not show negligence of the city.—New York Supreme Court, 128 N. Y. S., 60.

Water Bond Election—Illegality.

Blaine et al. vs. City of Seattle et al.—Constitution, Section 6, prohibited cities from becoming indebted to an amount exceeding 1½ per cent. of the taxable property without the assent of three-fifths of the voters therein voting at an election to be held for that purpose. The Seattle city charter provided for bonds for corporate purposes and authorized submission of an intended debt to voters as prescribed by ordinance and another section provided that every ordinance should contain but one subject. The city desiring to issue bonds for eight distinct improvements in no manner related to each other, the aggregate of which, if adopted, would make the city's indebtedness exceed the constitutional limitation, passed an ordinance submitting the proposition so as to require the taxpayers to vote for or against all of them. Held, the ordinance must prescribe a scheme not inconsistent with the Constitution and laws, and that the submission in question did not permit free action on the part of the voters and that the election was therefore void.—Supreme Courtof Washington, 114 P. R., 164.

Water Supply—Submission to Vote.

Carlson vs. City of Helena.—An ordinance, submitting for the determination of the voters the question of the propriety of producing a water supply from a certain creek, was not misleading as to the question to be determined, because the city had already purchased and paid for water rights from such creek, since the water supply had not been procured by the city in the sense that it had been made available for use; the propriety of doing so being the real question submitted.—Supreme Court of Montana, 114 P. R., 110.

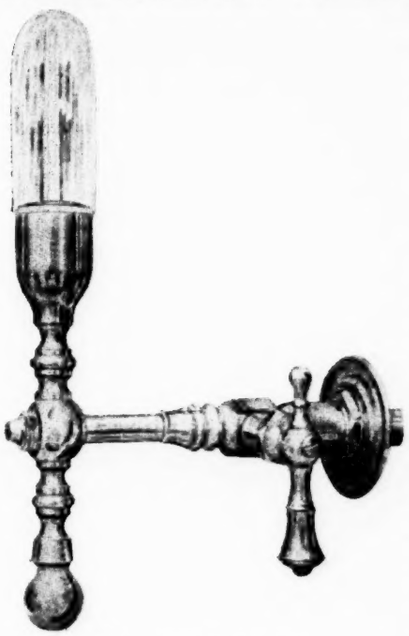
Discharge of Sewage into Water Course

Fonda vs. Village of Sharon Springs.—The discharge by a village of sewage into a natural water course, rendering the waters thereof unfit for cattle to drink, and causing quantities of filth to stand in pools at times of low water, from which a noxious stench arises, is a public nuisance, the right to maintain which could not be given by grant or acquired by prescription. Statutes expressly authorizing the construction of sewer systems with the approval of the State Board of Health give no authority for maintenance of a nuisance involving consequent injuries to private property. The owner of land injured from the discharge of sewage into a stream by a village may have such village restrained, though others contribute to the injury, and may recover from the village such damages as its acts have occasioned up to the time of trial, but such village should be given a reasonable time before enforcing the injunction in which to provide for a different disposal of its sewage, the village in the meantime to pay the injured land owner his damages suffered during such period of suspension.—Supreme Court of New York, 128 N. Y. S., 147.

MUNICIPAL APPLIANCES

Sanitary Drinking Faucets

The M. H. Foundry and Manufacturing Company, Inc., Belleville, Ill., manufactures a line of sanitary drinking faucets called the Twentieth Century. Of these the Gem is shown in the accompanying illustration. This faucet



GEM SANITARY FAUCET

may be inverted and used in the old old way for filling pails or for other purposes. The faucet is furnished of the compression or self-closing type.

Gasoline Trench Excavator of the Wheel Type

The American Ditching Machine Company, Minneapolis, Minn., manufactures an excavator of the wheel type shown in the illustration. The machine is propelled and the excavator operated by a 40-horsepower gasoline engine. The makers state that under ordinary conditions it will dig a ditch 6 feet deep and 2 feet wide at a minimum rate of 180 feet per hour, handling 80 cubic yards of excavation. One man operates the machine. The digging and elevating portion of the excavating wheel consists of an inner and an outer 22-inch rim separated by a 6-inch I-beam in the center. The outer rim is cut into segments and equipped with digging knives, forming continuous earth passages on both sides of the I-beam center. At the top of the wheel the dirt is pushed onto rotating discs by plows and discharged from the discs by means of other plows.

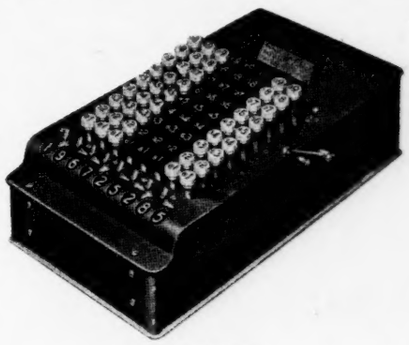
AMERICAN DITCHER—GASOLINE DRIVEN

Comptometer Suitable for Engineering Calculations

The Comptometer, made by the Felt & Tarrant Manufacturing Company Chicago, Ill., is a calculating machine, suitable for the use of engineering and contracting firms, as it does division, multiplication and subtraction with equal facility. The operation is exceedingly simple and can be learned, it is said, in a few hours. Experience, however, greatly increases proficiency.

The Comptometer is light, strong, yet so compact that it can be placed on an open book, desk or drafting table—anywhere convenient to the work. It is operated solely by keys like a typewriter. The operator simply touches the keys and reads the answer. There are no buttons to push, no operating lever to pull. The "touch" system of operation is just as practical as with a typewriter, thus enabling the operator to concentrate his attention on the work before him and so minimizing the danger of misreading figures. The duplex feature of the Comptometer, which permits the keys to be struck in any order or all together in any column at the same time, gives a speed in multiplication and division said to be three to four times as fast as that of a non-duplex machine. One machine will handle the figure work of several men in any drafting room.

The Comptometer may be used in making up a payroll as follows: Each day the timekeepers turn in the occupation of every man on the job and the number of hours he has worked. The accounting department posts from the timekeepers' books to loose leaf sheets. The extensions and postings of these, it is claimed, are made on the Comptometer in one-half the time required to do the work mentally. The usual great rush in the accounting department just prior to pay day is thus eliminated. The distribution of the labor charges, as well as charges for materials, supplies, administration and other expenses, is said to be greatly facilitated by the use of the machine.



COMPTOMETER

Fire Alarm Box

The Lannert Company 3915 Bonna avenue northeast, Cleveland, O., manufacture a fire alarm box which they state can be used in connection with any other make of boxes in the same circuit. The outer box A consists of a large heavy iron box which is furnished with a door B supplied with a good brass spring lock and key and so constructed that after unlocking the outer door this key cannot be taken out of the lock except with a release key, which is inserted in the keyhole C.

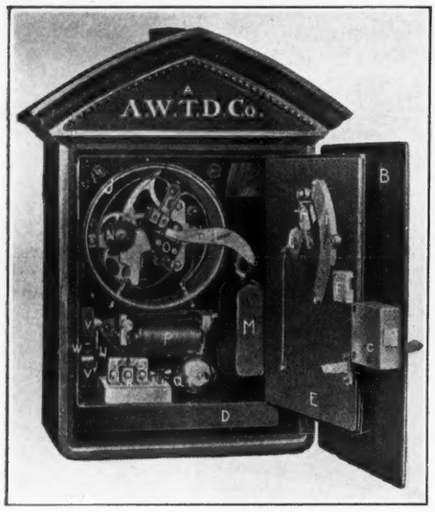
The release key remains in the charge of the fire department, while the unlocking keys are either furnished to people living near the box or a key is placed in a small iron box provided with a glass door so that if the key is desired the glass front is broken and the key, which is attached to the box by a chain, is taken out to unlock the door.

Within the large case and insulated therefrom the smaller square case D is secured, which is also provided with a door E and a brass lock F and is opened by means of the same release key.

To the inside of the inner door E a lever is pivoted at G, which extends sideways across the inside of the door under the dog H and plate I and projects through the slotted arc of a circle to permit the lever to be pulled down from the outside of the inner door so as to permit of sending in an alarm.

The lever engages the dog H after it is pulled down so as to prevent it being pulled down a second time and thus interfering with the alarm being sent until after the box has completed sending in the alarm, which then disengages itself so as to be in position to turn in another alarm.

Inside of the square case is secured the round case J, having a glass front which encloses a train of gears driven by the segment of gear K, whose shaft extends through the glass front and is secured at its outer end to the lever L, to one end of which is connected the weight M, which moves the clockwork, and the other end of the lever engages with the lever on the door so as to raise



LANNERT FIRE ALARM BOX

the weight when the lever is pulled down.

The shaft of one of the gears extends through the brass frame underneath the glass and has secured to it the hard rubber wheel N, provided with teeth to correspond to the number of the box.

To the frame is also secured the hard rubber plate O provided with two phosphor bronze springs, one of which extends over the wheel and is provided with a roller at its extreme end so that on the rotation of the wheel its projection will engage the roller and raise the platinum point of the upper spring away from the platinum point of the lower spring, first, however, producing a sliding motion of the contacts to keep them clean before breaking the circuit so that the circuit is broken and closed the proper number of times to correspond to the number of the box, and finally the last action of the movement short circuits the box so that the current does not pass through the platinum points, but goes through the shunt. An electromagnet P under the round case is provided with a hammer, bell and armature to be used for signaling. A porcelain base is secured to the inside of the square case and is provided with the three parts of a plug switch so that in testing the line on either side of the box can be grounded by taking out of the hole the plug Q and placing it in either of the holes between plate R and plate S or between plate R and plate T, but it is imperative that the plug should not remain in either of these holes and consequently is made sufficiently long to prevent the door from closing, thus notifying the operator to take out the plug. By placing the plug between plates T and S the box itself is out of service. The line wires are connected to the plates S and T, respectively, and the ground wire is connected to R. The wires are brought into the box through a conduit pipe which is screwed into the outer box either at the top or at the bottom. The Morse key is mounted on the same base for signaling.

To the left of the porcelain base is a cut-out switch U which consists of two hard rubber blocks V and V, on which are mounted the two levers of the switch. These two levers slide over two sets of contacts and are connected by a hard rubber handle, which normally extends to the inside of the door.

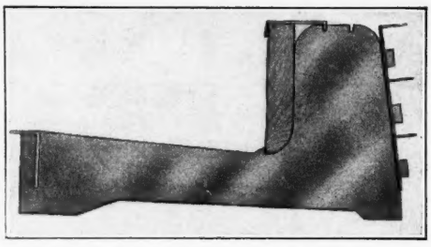
Two phosphor bronze springs W are shown between the rubber blocks V and V. These are so connected to the switch that when the inner door is closed the plug X slides in between the springs W and shunts the springs.

The object of the switch is to test the box and for which purpose a hard rubber switch plug is provided, the wires of which are connnected to two cells of dry battery and then the plug is inserted between the spring W; then on pulling out the switch handle it will shift the levers on two other contact points and short circuits the fire alarm box from the line circuit; the box will then be on a local circuit. After putting the plug Q between the two plates T and S and pulling down the lever L the box will operate the bell P.

The taps of the bell should correspond to the number of the box to prove that the box is in condition.

The switch lever is then pressed down, the plug withdrawn and the plug Q taken out from between the plates T and S and inserted into a hole from which it had originally been taken and the doors locked.

It is impossible for the operator to close the door while the plug is in circuit and should he take out the plug and omit pushing in the switch handle, the closing of the door will press the switch handle back into proper position to cut in the line at the same time as the insulated plug X short circuits the springs W.



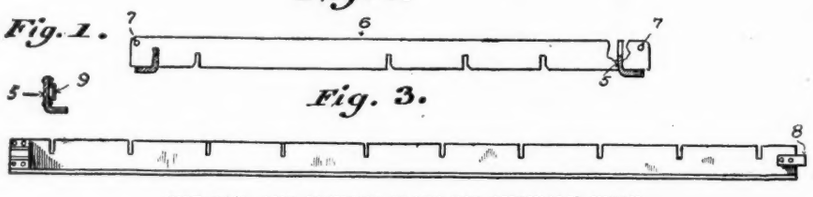
DIVIDING PLATE FOR CURBING

Reference to the illustration of the dividing plate for the curb and gutter forms will show the simple method of fastening the plank to the face of the curb. A short lug at the bottom and a hook over the top holds the plank rigidly in place. The manufacturers do not recommend steel for the face of the curb. The side rails at the back of the curbing fit into lugs on the dividing plate, as shown. The company also makes straight curbing forms of similar construction.

Service Pipe Cleaner

THE Staples cleaner, made by J. Fred Staples, 20 Ashland street, West Somerville, Mass., meets a long-felt want in thoroughly cleaning the inside of water and gas service pipes of any size and length, removing rust and other obstructions without disturbing the pipes, thus saving much trouble and expense. A hundred feet can be cleaned in less than an hour. The set of tools consists of (a) cleaner, (b) faucet outlet for hose connection, (c) stuffing box, (d) stuffing box diaphragm rubber washer, (e) jointed rod, (f) cutter, (g) couplings on rod.

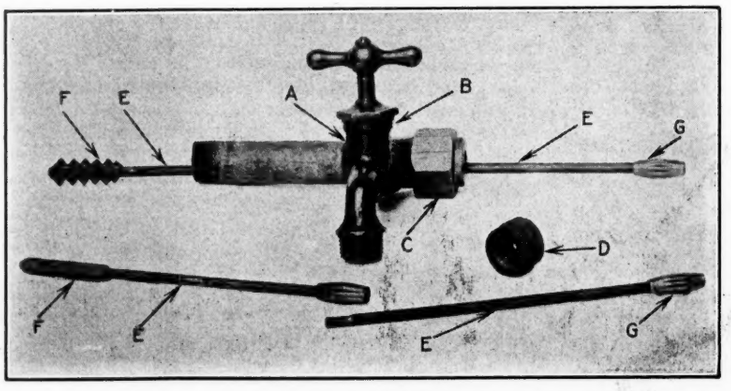
To use the cleaner shut off the water at cellar wall; put cutter (f) in cleaner, screw cleaner in stop and waste cock in cellar; turn on the water and open faucet at (b); push rod (e) forward and back, always turning to the right. Add on another section of rod and coupling until the entire length of pipe is cleaned. Always leave the water running at the faucet to carry off the rusty water and facilitate the cleaning of the pipe.



SIDE RAIL AND DIVIDING PLATE FOR SIDEWALK WORK

Steel Curb and Gutter Forms

JOS. UBBINK, Port Washington, Wis., manufactures steel forms for cement sidewalk and curb and gutter construction. The illustrations show the dividing plates and side rails. Fig. 2 shows a crosspiece or dividing plate showing the notches cut, making it adjustable at 6-inch intervals. Fig. 3 shows a rigid sidepiece showing cuts making expansion joints adjustable at one-foot intervals. Fig. 1 shows an end section with the socket into which the tongue fits. The rigid sidepieces are made of No. 10 gauge steel, which are bent to place in a hydraulic press The crosspieces are made of No. 8 gauge steel, and the flexible sidepieces (for curves) are made of No. 12 gauge spring steel.



STAPLES SERVICE PIPE CLEANER

NEWS OF THE SOCIETIES

New England Water Works Association.—About one hundred members attended the meeting at the Hotel Kimball, Springfield, Mass., April 12, to listen to papers and discuss the subject of "Fire Protection." In the opening of the meeting President Allen Hazen introduced Mayor Lathrop, who described the conditions in Springfield previous to the recent increase in water pressure. E. V. French, Boston, presented a paper on "Desirable Pressure of Hydrants." He stated that the standard fire stream to-day is that discharged by a 1⅛-inch smooth nozzle, with a pressure at the base of the nozzle of 45 pounds, giving 250 gallons per minute. This, of course, means a much greater pressure at the hydrant. Even where hydrants are spaced at reasonable close intervals hose lengths of from 250 to 350 feet are necessary. The friction loss in the best hose, he said, is 14 pounds per hundred feet. Hence the hydrant pressure which best meets the conditions of business and manufacturing sections of cities of medium size or less is 80 to 100 pounds and for cities above medium size 100 pounds. Pipe sizes, the speaker said, should be such that the maximum amount of water needed in any section can be supplied without reducing the pressures at the hydrants more than about 10 pounds below the static pressures existing with everyday drafts.

Morris Knowles, Chief Engineer Bureau of Filtration, Pittsburg, Pa., spoke of the false economy in some small cities supplied by private companies in maintaining a small number of hydrants in order to reduce expense. Walter M. Richards, superintendent New London water works, spoke of insurance rates, and expressed the opinion that insurance companies should stand part of the expense of that portion of the water works maintained for fire protection. George W. Stacy, Marlboro, spoke of the improvement in pressure and number of hydrants in Marlboro, and said that they had no effect in reducing insurance.

National Association of Fire Engineers.—The annual convention of the National Association of Fire Engineers will take place in Racine, Wis., on September 19-22, inclusive. At a meeting of the board of directors in Milwaukee the following subjects for papers to be discussed were selected and chiefs designated to prepare them: "Fire Colleges," Chief Croker, of New York; "Fire Protection by Education Rather Than by Legislation," H. C. Henley, of St. Louis, Mo., and A. V. Bennett, of Birmingham, Ala.; "Electrical Propelled Fire Apparatus," W. H. Daggett, of Springfield, Mass.; "Motor and Gasoline Fire Apparatus," Arthur Aungst, of Alliance, O., and Thomas Ballentyne, of Savannah, Ga.; "Caliber of Fire Streams and Their Relative Value," Charles H. Fox, of Cincinnati, O.; "Compulsory Sprinkling of Basements," W. H. Loller, of Youngstown, O.; "Duties of State Vice-Presidents at International Conventions," John I. Hawk, of Moline, Ill.; "Rubber Tires—Solid vs. Pneumatic," Charles Swingley, of St. Louis, Mo.; "Best Method of Selecting Fire Hose," Harry Creamer, of Chicago, Ill.; "Equipment and Efficiency of Volunteer Fire Service." J. H. Runyon, of Morristown, N. J.; "Standard for Drills and Discipline," Terrence Owens, of Denver, Col.

National Good Roads Congress.—Commissioner Exum has received assurances from the following Mayors that they will be in attendance at the Congress, Birmingham, Ala., May 23-26: Mayor Frederick H. Kreismann, of St. Louis; Mayor Courtland S. Winn, of Atlanta, Ga.; Hilary E. House, Mayor of Nashville; Edward E. Burkhart, Mayor of Dayton, O.; Martin Behrman, of New Orleans, La.; W. A. Gunter, Mayor of Montgomery, Ala.; T. O. Thompson, Mayor of Knoxville, Tenn.; George S. Marshall, of Columbus, O.; W. S. Gordon, Mayor of Jacksonville, Fla.

Citizens' Committee on Safety, New York City.—A Fire Prevention Bureau has been opened in the Charities Organization Building, 105 East Twenty-second street, New York. The bureau is planned to be a permanent contribution to the city's civic bodies, as a result of the Asch Building fire disaster. The purpose is to create a general clearing house on fire-trap information, on the ways to prevent fires and on the manner in which public officials are carrying out the fire protection laws. The following officers were elected: Henry L. Stimpson, president; Peter J. Brady, vice-president; John A. Kingsbury, secretary, and George W. Perkins, treasurer. It is the intention of the Bureau to make a recurrence of the conditions at the Asch fire impossible.

Southwestern Electrical and Gas Association.—The convention will be held in the Municipal Auditorium, Houston, Tex., April 27-29. The meeting will be called to order by President W. B. Tuttle, San Antonio, and the welcoming address will be made by Mayor Baldwin Rice. A new feature of the Houston meeting is the inauguration of the first electrical show in the Southwest, which will be participated in by the manufacturers of the United States who are members of this association. Exhibits will be more numerous and interesting than ever before, including the latest devices in departments of electric lighting, street railway and gas. Among the papers to be presented will be one on the "Investigation and Care of Return Currents," by George H. Clifford, general manager Northern Texas Traction Company, Fort Worth, Tex.

American Society of Mechanical Engineers.—The local committee of the American Society of Mechanical Engineers—E. M. Herr, chairman; Elmer K. Hiles, secretary—having in charge the preparations for the convention of the society, which will be held in Pittsburg, Pa., May 30 to June 2, inclusive, has nearly completed the work of arranging the programme for each day during the meeting. Professional sessions will be held in the Lecture Hall of the Carnegie Institute, near the headquarters, Wednesday morning and evening, Thursday and Friday morning. In the meantime there will be a number of inspection trips to various industrial plants in the vicinity, a boat excursion for the members and ladies up the Monongahela River, a reception and ball at the Hotel Schenley on Thursday evening, and finally, on Friday evening a smoker and entertainment, given by the Engineers' Society of Western Pennsylvania in their rooms in the Oliver Building. A carefully prepared programme for the entertainment of the lady visitors has been arranged by a committee of ladies from Pittsburg and vicinity, which includes a number of social functions.

Virginia Avenue Improvement Association.—Articles of association were recently filed for a unique association formed of 38 residents of Virginia avenue, Detroit, Mich. The total subscribed capital is $36,550, the amount authorized $45,000. The money is to be used for the buying of property on which the association holds options for beautifying the approaches to the avenue and for taking general care of the street, its alleys, trees, shrubbery, etc. The avenue already has the reputation of being one of the handsomest in the city. It is proposed to widen the street to about 120 feet at both approaches, and to build an attractive red brick wall of Virginia colonial design, 80 feet in width, in the center, having driveways curve into the roadway proper on either side of the wall, through a garden of plants and shrubbery, which will effectually conceal the thoroughfares from view. Walls will also be continued beyond the sidewalks. On each side of the approaches, 50 feet deep at the Woodward avenue entrance and 42 feet deep at the Hamilton Boulevard entrance, will be reserved and transformed into parks, and when these have been beautified they will be dedicated to the city. The plans for the improvements have been prepared by the architect, George V. Pottle, who is a member of the association. Application will also be made for a change in name for the three blocks reaching from Woodward avenue to Hamilton Boulevard from Virginia avenue to Virginia Park.

Pennsylvania Gas Association.—The third annual convention was held in the Auditorium, Philadelphia, April 12-14. The following officers were elected: President, C. W. Butterworth, Milton; first vice-president, Herbert Ganser, Norristown; second vice-president, W. R. Rhoades, Williamsport; secretary and treasurer, William H. Merritt, Lebanon; council, C. B. Bains, Ardmore; L. S. Williams, Harrisburg; John A. Frick, Allentown.

City Club, St. Paul, Minn.—A popular meeting arranged by the club to sound public sentiment on the proposed city plan prepared under the club's direction by John Nolen aroused a great deal of enthusiasm and brought out an attendance of about 500 citizens. Louis Betz, president of the City Club, presided. Mr. Betz said the idea of beautifying the city proposed by the city plan does not contemplate tying pink ribbons to the lamp posts and petitioning the Park Board to plant a few flowers in Rice Park. It means rather the enhancing of real estate values and making the city attractive to the traveler, so it will not be necessary to go abroad to spend his money. He said no one would build a house without a plan, and in building a city it also was necessary to have a comprehensive plan. He referred to the civic improvement being made in Washington, D. C., the purpose of which is to make a city reflecting the character of the country. He thought St. Paul should be made a city which would reflect the character of the great State of Minnesota. President Betz also read a paper by John Nolen, the city plan expert, covering the idea of regulating the city by districting it, thus providing for industries, retail stores, jobbing houses, public buildings and residences according to their respective needs. Mr. Nolen showed this plan in some cities has more than doubled the value of property in the various districts.

Calendar of Meetings

April 27-28.
Good Roads Association of Florida.—Annual Meeting, Tallahassee. C. L. Bittinger, Secretary, Ocala, Fla.

May 15-17.
National Conference on City Planning.—Philadelphia, Pa.—Flavel Shurtleff, Secretary, 19 Congress street, Boston, Mass.

May 17.
Massachusetts Highway Association.—Quarterly Meeting in conjunction with the New England Conference on Street Cleaning, Springfield, Mass.

May 17.
New England Conference on Street Cleaning. — Springfield, Mass. — Corresponding Officer, Carol Aronovici, 55 Eddy street, Providence, R. I.

May 18-19.
Ohio Society of Mechanical Steam and Electrical Engineers.—Annual Convention, Youngstown.—F. E. Sanborn, Secretary, Ohio State University, Columbus.

May 23-25.
National Fire Protection Association.—Annual Meeting, New York City.—F. H. Wentworth, Secretary, 87 Milk St., Boston.

May 23-26.
National Good Roads Association.—Fourth National Good Roads Congress, Birmingham, Ala.—J. A. Rountree, Secretary, Birmingham, Ala.

May 25-26.
League of Second and Third Class Cities of New York.—Poughkeepsie, N. Y.

May 29-June 2.
National Electric Light Association.—New York City.—T. C. Martin, Secretary, 31 West 39th St.

June 5-14.
National Probation Officers' Association.—Boston, Mass.—Roger N. Baldwin, Secretary, 903 Security Building, St. Louis, Mo.

June 6-10.
American Water Works Association.—Thirty-first Annual Convention, Powers Hotel, Rochester, N. Y.—John M. Diven, Secretary, 14 George street, Charleston, S. C.

June 7-14.
National Conference of Charities and Correction. — Boston, Mass. — Alexander Johnson, Secretary, Ft. Wayne, Ind.

June 7.
National Association for the Study and Prevention of Tuberculosis.—Denver, Col.—Dr. Livingston Farrand, Executive Secretary, 105 East Twenty-second street, New York City.

June 11-16.
International Association of Chiefs of Police.—Eighteenth Annual Convention, Rochester, N. Y.—Major Richard Sylvester, Superintendent of Police, Washington, D. C., President.

June 13-18.
New York State Association of Chiefs of Police.—Annual Convention, Rochester, N. Y.

June 13-16.
American Society of Civil Engineers.—Annual Convention, Chattanooga, Tennessee.—Charles Warren Hunt, Secretary, 220 West 57th St., New York.

June 21-22.
National Conference of Poor Law Officials. — Boston, Mass.—Dr. Robert W. Hill, President State Board of Charities, 105 East Twenty-second street, New York City.

August 15-18.
Firemen's Association of the State of New York.—Watertown, N. Y.—A. H. Otto, Secretary.

September 19-22.
International Association of Fire Engineers.—Annual Convention, Racine, Wis.

September 19-22.
American Hospital Association.—New York City. J. N. E. Brown, M.D., Secretary, Toronto General Hospital, Can.

September 24-30.
International Congress on Tuberculosis.—Rome, Italy.—Professor Ascoli, Secretary-General., Via Lucina, Rome, Italy.

September 26-29.
American Society of Municipal Improvements.—Grand Rapids, Mich.—A. Prescott Folwell, Secretary, 239 West Thirty-ninth street, New York City.

October 4-6.
League of American Municipalities—Annual Convention, Atlanta, Ga.—John MacVicar, Secretary, Des Moines, Ia.

PERSONALS

BERGRR, F. J., has been elected Mayor of Eugene, Ore.

BLOOMQUIST, H. T., has been elected City Engineer of Mankato, Minn.

DYER, A. E., County Surveyor of St. Louis County, Minnesota, is also City Engineer of Hibbing.

H. J. HAMBLE has been elected Mayor of Denver, Colo.

KELSEY, LOUIS C., civil and hydraulic engineer, of Salt Lake City, has been engaged in an investigation for the Mayor and City Council of Burley, Idaho, of a water supply and to make recommendations as to a water works system.

LADOMUS, B. G., has been re-elected City Engineer of Chester, Pa.

MESIKOFF, J. A., has been appointed City Engineer to succeed Chas. J. Poetsch.

MYERS, DR. GEO. T., has been appointed City Physician of Norfolk, Va.

PALMER, W. K., & Co., Engineers, of Kansas City, Mo., have been engaged to remodel the water works systems and install electric lighting plants at Vermillion, S. D., and Anita, Ia.

RETTIG, GEO., landscape architect of Cleveland, Ohio, gave a lecture recently, at Youngstown, on trees. Mr. Rettig spoke of the municipal regulation of tree care and tree planting in Cleveland.

RODNEY RICHARD S., an attorney of New Castle, Del., has been elected Mayor.

SCHROTH, JULIUS R., has been elected Mayor of Winona, Minn.

SCOTT, J. P., was the successful candidate for Mayor of Cumberland, Md., on the Citizens' ticket.

THUM, WM., is the new Mayor of Pasadena, Cal.

WADHAM, JAMES E., has been elected Mayor of San Diego, Cal.

MAYORALTY ELECTIONS

ILLINOIS

Chicago—Carter H. Harrison.
East St. Louis—Chas. S. Lambert.
Peoria—Edward Woodruff.
Springfield—John S. Schnepp.
Galesburg—K. Sanderson.
Moline—Martin Carlson.
Geneseo—John H. O'Brien.
Macomb—John M. Keefer.
Oneida—G. L. Burt.
Freeport—C. J. Dittmar.
Quincy—John F. Garner.
Rock Island—Harry M. Schriver.
Belleville—Fred J. Kern.

KANSAS

Fort Scott—W. E. Brooks.
Kansas City—J. E. Porter.
Tonga—Joseph H. Dreisbach.
Mapleton—C. C. Goss.
Wichita—J. X. Graham.
Topeka—Mayor Billard, re-elected.
Ottawa—W. E. Wood.
Leavenworth—Albert Doege.
Emporia—Frank McCain.
Salina—C. B. Kirtland.
Hutchinson—Frank Vincent.
Atchison—C. D. Walker.

WISCONSIN

Appleton—Dr. J. V. Canavan.
Janesville—John C. Nichols.
Fond du Lac—Frank J. Wolff.
Ashland—Dr. J. M. Dodd.
Whitewater—David Zuill.
Oshkosh—John Banderob.
La Crosse—John Deugler.
Racine—W. S. Goodland.
Bay City—Dr. Roy O. Woodruff.

MISSOURI

Palmyra—James W. Owsley.
Canton—Frank C. Millspaugh.
Jefferson City—Cecil W. Thomas.
Wellsville—Dr. S. S. Cox.
Joplin—Guy T. Hume.

TRADE NOTES

Cast Iron Pipe.—Chicago: Business has not been quite as active as for several weeks. Quotations: 4-inch, $25.50; 6 to 12-inch, $24.50; 16-inch and up, $24. San Francisco: The tonnage since April 1 has been moderate, but conditions are considered favorable for an active summer. Many Coast cities are making preliminary preparations for auxiliary systems for fire protection. Quotations: 4-inch, $35; 6 to 12-inch, $34. Birmingham: Plants now running are well supplied with orders, and it is believed that prices will be higher. Quotations: 4 to 6-inch, $23; 8 to 12-inch, $22; over 12-inch, average $21. New York: Trade is dull, with only small lettings in sight. Quotations: 6-inch, carloads, $22.

Lead.—Market is dull. New York, 4.30c.; St. Louis, 4.45c.

Fire Prevention Company. — The Croker National Fire Prevention Engineering Company, 562 Fifth avenue, New York City, is a new corporation organized by former Chief Croker of the New York Fire Department. Mr. Croker purposes to provide for owners and lessees of property a system under which an inspection can be made by trained experts. He expects to have 300 men connected with the bureau by the end of a year, for he believes that the idea is capable of development on many lines. The inspectors will be drawn from retired officers of the Fire Department. It is the plan of the new company to provide patrols who will take charge of theaters, hotels, apartment and tenement houses, asylums and institutions in which numbers of persons may be gathered for employment, worship or amusement. There will also be a division assigned to private houses. Written reports will be made to owners and occupants, in which will be pointed out the dangers of fire from defective heating apparatus, electric light wiring and other conditions which have been the cause of fires. Large private estates are to be inspected along the same lines, and their employees organized into fire brigades and drilled for emergencies. The services of the organization will be at the disposal of any city or town that may be about to organize a municipal fire department, or where a reorganization may be found to be desirable.

Use of Cement.—The Chicago Portland Cement Company, 108 La Salle street, Chicago, Ill., publishes a handsomely illustrated booklet called "Chicago AA" Facts. The illustrations show many uses of cement, among them some steps and walls in Lake Park, Milwaukee, Wis., designed by A. C. Clas, of the Milwaukee Park Board.

Reinforced Concrete Sewers.—Walter C. Parmley, member American Society Civil Engineers, announces that the business hitherto carried on by him as consulting engineer and engineer for designing, constructing and manufacturing reinforced concrete sewers and other structures, will hereafter be conducted under the firm name of Parmley & Nethercut. Edgar S. Nethercut, member American Society of Civil Engineers, will have his headquarters in the Monadnock Block, Chicago, Ill., while Mr. Parmley will remain as hitherto at the Everett Building, 45 East Seventeenth street, New York City.

Traction Engines.—The Joshua Hendy Iron Works, San Francisco, Cal., has taken over the plant of the Johnson Tractor Company's plant, with the intention of manufacturing traction engines. The machine work will be done at the large plant of the Joshua Hendy Iron Works at Sunnyvale, Cal., the Johnson shop being used as an assembling plant. F. D. Calkins will have charge of the traction engine department.

Water Works Company.—At a meeting of the stockholders of the Port Jervis Water Works Company, Port Jervis, N. Y., April 13, the following directors were elected: Dr. W. L. Cuddeback, Dr. Henry Hardenbergh, Dr. Charles N. Skinner and Messrs. Jacob Kalmbach, Charles W. Snyder, Jacob F. Pobe and Peter E. Farnum. The directors met and elected officers as follows: President, Dr. W. L. Cuddeback; vice-president, Dr. H. Hardenbergh; treasurer, Alfred Marvin; secretary, Christoph Graebner.

Fort Wayne.—Ralph E. Avery, Concordia, Kan., has published a handsome booklet of illustrations of scenes in Fort Wayne, Ind., together with some descriptive matter. The illustrations are of public buildings, industrial plants, outdoor scenes and private residences. On the cover is a blank space in which is to be inserted an illustration of the plant of the company which distributes the booklet among its customers and friends; our copy was the plant of the Fort Wayne Electric Works.

Steel Flumes.—T. C. Egleston, sales manager, 714 Ideal Building, Denver, Col., has issued a booklet describing the Maginnis galvanized steel flume and illustrating a number of installations. The flume is made by a flat sheet of galvanized steel 30 inches wide and as long as required for the perimeter of the flume and passing it through a forming machine that leaves the sheet in a semi-circular form with a bead rolled in each edge of the sheet. A steel rod of the proper size to carry the weight of the flume, and of the right length, is threaded at both ends for a nut, formed in semi-circle, passed around the outside of the flume and lies in the bead when the flume is in place. A steel channel of the proper size and length is also formed in a semi-circle and rests over the bead on the inside of the flume when the flume is in place. When the flume is assembled and the nuts tightened, the rod draws tight in the hollow of the bead and the channel presses with the same force on the two edges of the bead, thus forming a water-tight joint. No rivets or solder are used.

Blueprint Machine.—The Shaw Blueprint Company, 9 Campbell street, Newark, N. J., has placed a continuous blueprint machine on the market which is claimed to operate at a low cost for current. The Shaw operates by a single arc lamp, which uses 15 amperes at 110 volts, or 7½ amperes at 220 volts, traveling up and down continuously in the center of a half cylinder of glass, while the paper and tracing are carried around by an endless canvas band. All that is necessary is to insert the ends of the paper and the tracing between the guide rollers and the machine does the rest. The printing speed of the 42-inch machine is said to be 2 feet per minute, using rapid paper. The machine only requires a space of 2 feet 6 inches square and head room of 8 feet.

Quality or Price?—Under this caption the H. Mueller Manufacturing Company, Decatur, Ill., manufacturer of water works supplies, has published a little pamphlet containing extracts from an address presented and discussed at a gathering of big buyers. It met with almost unanimous approval as representing the growing prevalent conviction that quality and not price is entitled to first consideration. The argument stated briefly is axiomatic, though often forgotten, that the cost of installation of a good article is no more than that of a poor one and the cost of maintenance is less.

Road Asphalt.—The Indian Refining Company, whose headquarters have heretofore been in Cincinnati, has decided to move its executive department to New York. A branch office, to take care of Western business, will be maintained in the First National Bank Building, Cincinnati.

Gasoline Rock Drill.—The Scott Gasoline Rock Drill Manufacturing Company, St. Louis, Mo., has filed articles of incorporation, with $500,000 capital stock. It is the intention of the company to establish a factory in St. Louis for the manufacture of a drill invented by Louis L. Scott. The drill is attached directly to the cylinder of a gasoline engine, doing away with the use of a steam plant, air compressor and hose in drilling rock and other substances. The machine is being manufactured under contract at present. The incorporators are: Louis L. Scott, John R. Williams, Samuel D. Martin and others.

Cast Iron Pipe.—The United States Cast Iron Pipe and Foundry Company has moved its Chicago office from the Rookery Building, where it has been located for many years, to the People's Gas Building, rooms 923-927, where much more desirable quarters have been engaged.

Ornamental Lamp Standards.—The Flour City Ornamental Iron Works, Minneapolis, Minn., has in press a new catalogue de luxe of its lamp standard department. The brochure will contain a detailed account of the various designs manufactured by the company —Corinthian, Egyptian, Capital and Boulevard. Reproductions of these on a scale of half an inch to the foot will appear. The text will contain the detailed specifications for the standard.

Appliances for Fire Prevention and Protection.—The Chief of the Fire Department of a European city, who is also an official of an international competition for firemen and appliances adapted for fire prevention and protection to be held in connection with an international exposition that opens April 29, has asked an American Consul for the names of the leading American Fire Chiefs and the most important American manufacturers producing appliances that have to do in any way with fire prevention and protection. The information is desired in order that printed matter and notices regarding the competition in question may be forwarded to them. Address No. 6540, Bureau of Manufactures, Washington, D. C.

Cotton Waste Substitute.—The Sanitary Rag Company, Kalamazoo, Mich., packs washed wiping cloths in bales of from 100 to 500 pounds, to be used about machinery as a substitute for cotton waste. The rags are light in weight, running five to seven pieces to the pound, free from buttons, hooks, eyelets, starchy parts, etc.

Auto Engine Tested.—The new auto pumping engine purchased for the Lansing (Mich.) Fire Department from the Webb Motor Fire Apparatus Company was tested recently. After one of the tests it was found that the suction pipe contained about a pound of oakum, which had presumably been used at some time in packing the hydrant. With two lines of hose, each 200 feet long, 740 gallons of water were thrown per minute. President John Bohnet and other members of the Board of Police and Fire Commissioners were very much pleased with the engine.

Mexican Gas Plant.—The large gas plant and distributing system of the Guadalajara Gas Company, Guadalajara, Mexico, will be finished and placed in commission some time next month. The mains have been laid in all of the principal business and residence streets and many buildings have already been equipped for using the new fuel. The plant is modern in every respect. The company is composed of San Francisco (Cal.) men, and the concession from the State and Federal Governments under which it is operating is unusually liberal. The installation of the plant was done under the direction of W. A. Aldrich, of Grand Rapids, Mich.

Small Engine and Generator Sets.—The Crocker-Wheeler Company, Ampere, N. J., has placed on the market a small steam engine and direct current generator in one unit. This generating set is advocated for the production of electric current for illumination in districts where kerosene lamps would otherwise have to be used. The steam engines are Giles Type E, made by the United States Rapid Fire Gun and Power Company, Derby, Conn. The generators vary in capacity from 1.75 to 21 kilowatts.

Creosoting Plant.—The Atlantic Coast Line Railroad has decided to build a creosoting plant at Gainesville, Fla., of sufficient size for treating all of the timber used on the system. Citizens subscribed $5,000 to purchase the land. It is stated that 100 men will be employed on the work.

Contracting Engineers.—Frederick L. Cranford, James C. Meem and H. P. Moran have opened offices at 177 Montague street, Brooklyn, and will continue their business of contracting engineers at that address.

Granite Paving Blocks.—The granite paving blocks quarried by the Harris Granite Quarries Company, Salisbury, N. C., are claimed to be the strongest, as well as the best shaped of any made in the United States. Six samples from the company's Balfour quarry, Rowan County, North Carolina, recently tested at the United States Arsenal, Watertown, Mass., showed an ultimate crushing strength per square inch of from 43,670 to 51,990 pounds. The next strongest samples from other quarries broke at from 27,279 to 29,347 pounds per square inch.

Delivery of Pumps Delayed.—Application for an extension of the time for delivery of two 20,000,000-gallon electrically driven centrifugal pumps, for which they were awarded contracts by the Minneapolis, Minn., water works department, has been received from Henry R. Worthington, of New York, by City Engineer Andrew Rinker. The contract provides for a delivery before June 1 and imposes a penalty for each day of delay after that date. The contractor now asks an extension until August 15.

NEW CORPORATIONS

The Acme Hoisting Machine Company, St. Louis, Mo.; capital $50,000. Incorporators: F. R. McCune, Geo. S. Cornell and John M. Patke. The company will manufacture hoisting and power, illuminating, excavating and carrying machinery.

The C. A. Wood Preserver Company, St. Louis, Mo.; capital $10,000. Incorporators: M. F. Gerhard, H. H. Gerhard, H. A. Giesen and others. The company will manufacture wood preservers and wood preserving processes.

Hopeman Engineering and Construction Company, Moorhead, Minn.; capital $25,000. Incorporators: A. M. Hopeman; vice-president, Ralph Pederson; treasurer, A. H. Erickson; secretary, P. H. Pederson. It will be capitalized for $25,000.

Bald Mountain Portland Cement Company, Rome, Ga.; capital $1,000,000. Incorporators: J. L. Bass, J. N. King, B. T. Haynes, W. J. Griffin and E. A. Heard, of Rome; M. M. Jack, of Dalton; S. W. Palmer, of Millen, and E. C. Lester, of Atlanta.

The Farmington Light & Power Company, Farmington, Ill., has been incorporated with a capital stock of $30,000. The incorporators are Theo. Bass, M. M. Anderson, H. E. Worden and A. L. Thompson.

Swatard Electric Light, Heat & Power Company, Scranton, Pa.; capital $5,000.

Auburn Light, Heat & Power Company, Auburn, N. Y.; capital $900,000; to manufacture gas and electricity for supplying the municipalities of Auburn, Aurelius, Cayuga, Owasco, Sennett, Fleming, Skaneateles, Seneca Falls, Fayette, Waterloo and Geneva. Incorporators: J. Alward Seymour, Dr. Frederick Sefton, D. Edwin French, Geo. W. Bowen and Henry L. Coleman, Auburn, and Irving Rouse, Rochester; E. H. Palmer, Lansing; G. Hoskins and Henry O. Palmer, Geneva.

Croker National Fire Protection Engineering Company, 562 Fifth avenue, New York City; capital $10.000. Incorporators: Edward F. Croker, Charles Thorley and David M. Neuberger, all of New York.

The Red Oak Deep Well Company, Red Oak, Tex.; capital $3,500. Incorporators: G. L. Ligon, F. F. Beddo, H. Harrison and others.

The Green Deep Well Co., Sherman, Tex.; capital $3,000. Incorporators: Dupon B. Lyon, R. A. Chapman, Jr., W. L. Green and others.

William P. McDonald Construction Company, Manhattan, N. Y.; construction work of all kinds; capital $25,000. Incorporators: A. Forhay, 13-21 Park Row; Russell Goldman, 1200 Madison avenue, both of New York City; John I. McDonald, 728 Marcy avenue, Brooklyn.

Bibb Sewer Pipe Company, Macon, Ga.; capital $50,000. Incorporators: O. J. Massee, Jr., J. P. Stetson and A. S. Bates.

The Honey Grove Sewer Company, Honey Grove, Tex.; capital $10,000. Incorporators: J. H. Whattley, Sam G. Duff, F. M. Kemp.

The Kerbaugh-Empire Company, Valhalla, N. Y.; capital $4,000,000. Incorporators: Edward D. Adams, William Barclay Parsons, William R. Coade, Alfred Skitt, Eugene Klapp and Lamar Hardy, of New York City; N. S. Kerbaugh, Robert Cassatt, G. Dallas Dixon, Jr., of Philadelphia.

The Baltimore-Schub Concrete Corporation., Thomas G. Frame, Jr., Dover, Del.; capital $600,000. Incorporators: S. H. Moore, Harry M. Lindsay, N. E. Stubbs, all of Baltimore, Md.

The Paintsville Water & Light Company, Paintsville, Ky.; capital $20,000. Incorporators: H. M. Stafford and John E. Buckingham.

Hansen Continuous Chemical Fire Apparatus Company, St. Louis, Mo.; capital $50.000. Incorporators: F. William Runde, Edward E. M. Hansen, L. A. Ragan.

The Central Construction Company, Lexington, Ky.; capital $10,000. Incorporators: John M. Kelley, Howard K. Bell and others.

The Warner Construction Company, Muskogee, Okla.; capital $50.000. Incorporators: C. C. Goodman, Fort Smith; Fred E. Turner, Muskogee, and Campbell Russell, Warner.

The Fogleman & Turner Company, Oxford, N. C.; capital $25,000. Incorporators: W. H. Fogleman, L. B. Turner and Lelia F. Wyatt.

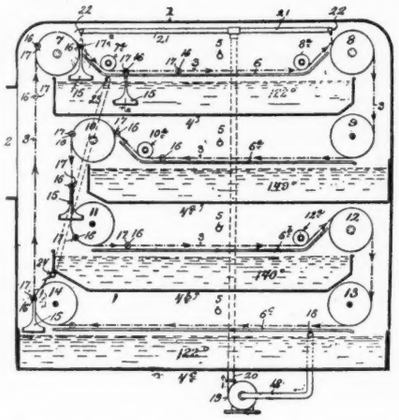
Western States Gas and Electric Company, Chicago, Ill.; capital $15,000,000.; Delaware corporation.

The Federal Engineering Co., Muskogee, Okla.; capital $25,000. Incorporators: Chas. E. Creager, Thos. F. Murdock and Walter G. Humphrey.

PATENT CLAIMS

989,235. AUTOMATIC WATER-PURIFIER. George F. Day, San Francisco, Cal. Serial No. 565,248.

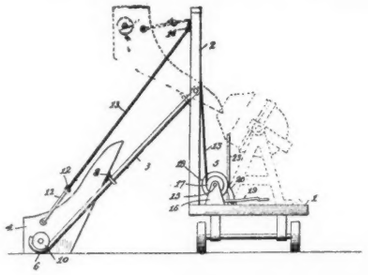
The combination in a water-purifying apparatus, of tanks adapted to independently contain unpurified water and chemicals, independent valve chambers through which the water and chemicals may flow, valves contained within the chambers designed to



deliver a proportional mixture, a unitary connection common to both valves, a purifier and filter through which the mixed liquids are caused to pass, a purified water-container, means to deliver the water thereinto, and means by which the valves are automatically simultaneously opened and closed.

990,194. LOADER FOR CONCRETE-MIXERS. James DuShane, South Bend, Ind Serial No. 556,084.

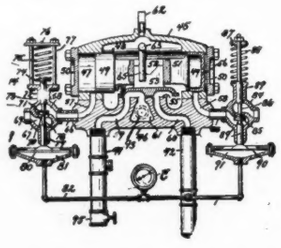
A loader comprising an elevating bucket, a hoisting mechanism therefor, and pivoted



tracks, said tracks being movable independently of each other and having their free ends held in parallel relation by the bucket.

990,085. SUBTERRANEAN PUMPING SYSTEM. Frederick C. Weber, New York, N. Y. Serial No. 473,516.

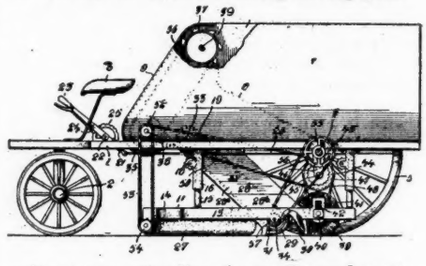
In a pumping system, the combination of a source of fluid pressure supply, with a liquid chamber, a pipe connection between said supply and said chamber, a reversing valve in said pipe connection for alternately admitting pressure to and exhausting the same from said chamber, means for shifting said valve comprising a duplex



piston, a casing therefor, a bypass in each head of said piston to permit the slow accumulation of pressure on each side thereof and thereby balance said piston, means controlled by the degree of pressure or vacuum in said chamber and pipe connection for releasing said accumulated pressure alternately from opposite ends of said duplex piston.

989,377. STREET-SWEEPER. Albert S. Machen, Norfolk, Va. Serial No. 541,320.

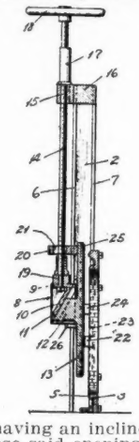
A street sweeper embodying a main frame carrying a receptacle, a carrier frame arranged below and vertically adjustable on said main frame, a pair of rearwardly converging front brushes mounted on the carrier frame, a transverse brush disposed in rear of said front brushes and also mounted on the carrier frame, a casing having gath-



ering trays extending forwardly and rearwardly between the front and transverse brushes to take up the dirt gathered thereby, said casing comprising relatively adjustable sections mounted respectively on the main and carrier frames, gearing for driving the brushes and a conveyor movable through said casing for elevating the dirt gathered by both trays into said receptacle.

989,201. VALVE OR GATE. Frank P. Snow, Los Angeles, Cal., assignor to Kellar-Thomason Manufacturing Company, Covina, Cal., a Corporation of California. Serial No. 570,245.

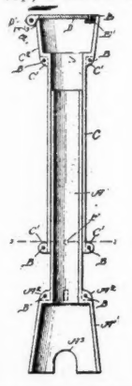
A valve plate having an opening, a member guided transversely with respect to said



opening and having an inclined slide, a disk adapted to close said opening and guided in said slide, a means for arresting the transverse movement of said disk to enable said slide to force said disk laterally toward said opening.

988,974. STOP-COCK BOX, HYDRANT AND STREET-WASHER. Frederick Chapman, Brooklyn, N. Y. Serial No. 562,867.

A device of the kind described, comprising an upper section having an expanded top, said top having an interior lug provided with a threaded aperture, a cover hinged to said top, a screw carried by said



cover and adapted to engage the threaded lug, a lower section having an expanded base, said upper and lower sections telescoping, and a set screw for securing said sections in any desired adjustment, each section consisting of two longitudinal halves bolted together.

THE WEEK'S CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage, Water Supply and Public Lighting—Fire Equipment and Supplies—Bridges and Concrete Work—Sanitation, Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also corrections of any errors discovered.

BIDS ASKED FOR

STATE	CITY	RECEIVED UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREET IMPROVEMENTS				
Florida	Jacksonville	Apr. 28, 10 a.m.	Resurfacing St. Johns ave. about 27,000 sq. yds. with as. mac.	Gail L. Barnard, County Engr
Ohio	Cincinnati	Apr. 28, noon.	Improving the Eight Mile road in Anderson township	Stanley Struble, Pres. Bd. Co. Comrs.
Ohio	Geneva	Apr. 28, noon.	Improving streets by grading, draining, curbing and paving with brick on concrete foundation and laying storm sewers	W. E. Morgan, Clk. Village Council.
Missouri	St. Louis	Apr. 28, noon.	Installing a municipal asphalt plant	W. B. Dryden, Secy. B. P. Imp.
Ohio	Cincinnati	Apr. 28, noon.	Grading, setting cement curbs, paving roadway with brick and constructing drains and inlets in portion of Ludlow ave.	John J. Wenner, Clk. B. P. Serv.
Ohio	Toledo	Apr. 28, noon.	Grading portion of Albert street and paving central 20 ft. with tar mac. together with nec. curb., retain. walls, drainage, etc	Fred. Shane, Secy. Bd. Pub. Serv.
Manitoba, Can.	Brandon.	Apr. 28, noon.	Paving various streets with wood block, asphalt block, sheet asphalt, bitulithic or vitr. brick	R. E. Speakman, City Engr.
Minnesota	Minneapolis	Apr. 28, 7:30 p.m.	Furnishing a stone crushing plant	Henry N. Knott, City Clerk.
Connecticut	New Haven	Apr. 28	Laying sidewalks of Portland cement in various streets	C. W. Kelly, City Engr.
Ohio	Springfield	Apr. 29	Construct. sidewalks and gut., and mac. portion of College ave	Jacob Klein, Dir. Pub. Serv.
Indiana	Terre Haute	Apr. 29, 11 a.m.	Grad. and pav. with gravel various roads in Vigo County	Nathan G. Wallace, Audr. Vigo Co.
Pennsylvania	York	Apr. 29	Lay. about 4,000 ft. conc. curbing and guttering at Penn Park.	City Clerk.
Ohio	Marysville	Apr. 29	Constructing 2½ miles of road in Union Township	Bert J. Shelton, County Audr.
Ohio	Ravenna	May 1	Grad. and pav. with brick 2.12 miles of county road	Commissioners Portage County.
Indiana	Greencastle	May 1	Improv. 13,333⅓ ft. of macadam road in Madison township	D. V. Moffett, Aud. Putnam Co.
Indiana	Versailles	May 1, 1 p.m.	Constructing 11,370 ft. of macadam road in Adams township.	Nicholas Volz, Aud. Ripley County.
Indiana	Williamsport	May 1, 1 p.m.	Constructing a gravel road in Kent township	David H. Moffit, Aud. Warren Co.
New York	Albany	May 1, 1 p.m.	Paving about 8,500 mi. of roads in various counties	S. Percy Hooker, Chm. Hwy. Com
Indiana	Fowler	May 1, 1 p.m.	Constructing free stone roads in Benton County of crushed biue stone, together with bridges and drainage	Lemuel Shipman, Audr. Benton Co.
Pennsylvania	Springdale	May 1, 8 p.m.	Constructing a system of water lines about 36,660 lin. ft.; constr. a 350,000 gal. reservoir; grading about 30,000 cu. yds.	R. J. Campbell, Chm. Com. Council.
Minnesota	Everdell	May 1, 2 p.m.	Grading 2 miles in Nelison township	Herman G. Fruetel, Town clerk.
Pennsylvania	Bradford	May 1, 5 p.m.	Paving one street and building two bridges	E. C. Charlton, City Clerk.
New York	New York	May 1, noon.	Furnishing 12 street sweeping machines	Wm. A. Edwards, Comr. St. Clean.
Pennsylvania	Plymouth	May 1, 7:30 p.m.	Repaving Main Street with vitrified block	John Lynch, Chm. Street Committee.
Washington	Hoquiam	May 1	Constructing a plank roadway 20 mi. long, est. cost $60,000	Board County Commissioners.
New York	Pittsfield	May 1	Paving various streets with vitrified brick	Paving Com., City Council.
Pennsylvania	Olyphant	May 2, 8:30 p.m.	Paving with vit. brick and curbing with stone one street about 9,105 sq. yds. paving; 6,455 lin. ft. curbing	Thos. F. O'Hara, Boro. Secy.
Minnesota	Two Harbors	May 2, 10 a.m.	Grading two miles of State road	John P. Paulson, County Auditor.
Indiana	Bedford	May 2	Constructing roads Nos. 1 and 2	County Comrs.
New York	Hudson	May 2, 10:30 p.m.	Repaving portion of Warren Street with vitrified brick	Commissioners Public Works.
New York	Niagara Falls	May 2	Repairing and repaving various streets	City Clerk.
Delaware	Wilmington	May 2	Constr. water-bound mac. road about 3 mi. long, and resur. ¾ mi.	F. A. Price, State Hwy. Comr.
Mississippi	Columbus	May 2	Constr. about 6,000 lin. ft. concrete curb and gutter, or granite curb and concrete gutter	E. S. Donnell, Mayor.
Iowa	New Hampton	May 3	Constr. 12,000 sq. yds. Portland cement paving; and 1,600 ft. cement curb	F. B. Strike, City Clerk.
Florida	Jacksonville	May 3, 10 a.m.	Constructing about 13,000 sq. yds. asphalt macadam resurfac.	Gail L. Barnard, County Engr.
New York	Binghamton	May 3	Paving portion of Water street with vitrified brick	S. W. Murray, City Clerk.
Missouri	Fulton	May 4	Construct. 9,000 yds. brick pavement on 5-in. concrete foundation; 12,000 yds. mac. with binder and 10,000 ft. con. curb.	P. D. Thurmond, City Engineer.
Ontario, Can.	Ft. William	May 4, 5 p.m.	Paving with asph. blk., sheet asph. or bit. about 14,100 sq. yds.	John Wilson, City Engr.
New York	Seneca Falls	May 4, 2 p.m.	Paving Main and Bayard sts., including 12,500 cu. yds. of excavation; 17,000 lin. ft. of curbing; 15,000 lin. ft. of 3-in. drain tile; 5,000 lin. ft. vitrified pipe; 42 catch basins; 25,000 sq. yds. brick or macadam pavement	J. W. Brennan, Village Engr.
New York	New Rochelle	May 4	Paving with macadam and constructing curb, gutter and sidewalks on various streets	Richard Lathers, Jr., Chm. B. P. W.
Ohio	Cleveland	May 4, noon.	Grad., drain., curb., paving with brick and imp. var. streets	A. B. Lea, Dir. Pub. Serv.
New Jersey	New Brunswick	May 4, 11 a.m.	Resurfacing portion of street, 3,000 ft. long and 60 ft. wide, with asphaltic concrete	Peter Hendricks, D. B. C. Freeholders
Missouri	St. Louis	May 5, noon.	Reconstructing various streets	Board Public Improvements.
Indiana	Crown Point	May 5, 10 a.m.	Constructing various gravel roads in Lake County	Chas. A. Johnson, County Auditor.
Ohio	Cincinnati	May 5, noon.	Improving Carthage avenue in Columbia township	Stanley Struble, Pres. Bd. Co. Comrs.
Indiana	Brazil	May 5, 11:30 a.m.	Constructing two gravel roads in Clay township	Edgar A. Stagg, Audr. Clay County
Dist. Col.	Washington	May 6, 2 p.m.	Furn. sheet asphalt for use on streets during year ending June 30, 1912	Cuno H. Randolph, Commissioner.
Ohio	Elyria	May 8	Constructing brick pavements	R. Moriarty, City Clerk.
Ohio	Barnesville	May 8	Paving Lincoln Street	F. Waldo Hilles, City Clerk.
Indiana	Brookville	May 9, 1 p.m.	Constructing gravel roads in Franklin County	Chas. A. Miller, County Auditor.
Florida	Jacksonville	May 12, 2:30 p.m.	Grading, curbing and paving with vitrified blocks of some standard brand various streets	Philip Prioleau, City Engr.
Indiana	Rushville	May 13	Constructing gravel road 36,830 ft. long	Joint Board Commissioners.
Kentucky	Catlettsburg	May 15, 6 p.m.	Improving portions of various streets, including 14,555 lin. ft. curb and gutter and 20,305 sq. yds. paving	H. Chatfield, City Clerk.
New York	Lackawanna	May 15, 8 p.m.	Paving with vitrified brick portion of Ridge Road	John J. Monaghan, City Clerk.
Tennessee	Memphis	May 16	Constructing 5.1 mi. gravel paving, 3.9 mi. tar macadam, 1.4 vitrified brick, 2.9 wood block or bit. and ½ mi. old stone	Geo. C. Love, Comr. Dept. Sts.
Ohio	New Philadelphia	May 22	Paving the New Cumberland Road with brick	City Clerk.
Mississippi	Hazelhurst	June 1	Constructing 58 miles of gravel roads in Copiah County	The George Company, Ran. Bldg., Memphis, Tenn.
SEWERAGE				
Ohio	Cincinnati	Apr. 28, noon.	Constructing main and lateral sewers	John J. Wenner.
Ohio	Geneva	Apr. 28	Constructing storm sewers	W. E. Morgan, Village Clerk.
Pennsylvania	N. Braddock	Apr. 28	Constructing sewers in portion of Jones ave. and 2 alleys	C. A. Stewart, Boro. Engr.
Ohio	Fremont	May 1	Constructing 700 ft. of tile sewer in Linden street	C. F. Bell, City Auditor.
Wyoming	Lusk	May 1, 8 p.m.	Constructing sewer system	D. E. Goddard, Town Clerk.
Minnesota	Cloquet	May 1	Constructing sewers and water mains, including 13,600 cu. yds. excavation, 10,300 lin. ft. of 8-in. and 10-in. sewers, 12,000 lin. ft. 6-in. and 4-in. water mains	City Clerk.
Indiana	Kokomo	May 1	Constructing about 12,935 ft. of intercepting sewer, from 10 to 48 inches diam.; with appurtenances and connections	Ben. Havens, City Clk.
New Jersey	Elizabeth	May 1, 8:30 p.m.	Construct. 350 lin. ft. 10-in. sewer; 11 8x10-in. connec.; 3 manh.	N. K. Thompson, Street Comr.
Tennessee	Park City	May 1	Constructing sanitary sewers	A. J. Queener, Recorder.
Pennsylvania	Springdale	May 1, 8 p.m.	Constructing a system of sewers, about 36,660 lin. ft.	R. J. Campbell, Chm. Com. Council
Alberta, Can.	Edmonton	May 2, 3 p.m.	Constructing 3,290 ft. of concrete sewer 10 ft. 6 in. in diameter	A. J. Latoinell, City Engr.
Florida	Pensacola	May 2	Constructing 15,060 lin. ft. storm water drains from 10 to 66-in. in diam.; and 23,880 lin. ft. of san. sewers from 6 to 24-in.	John A. Merritt, Chm. Bd Bond Tr.

BIDS ASKED FOR

State	City	Received Until	Nature of Work	Address Inquiries to
			SEWERAGE (Continued)	
South Dakota..	Canton.....	May 2.....	Extending the sewer system at the Canton Insane Asylum....	Dr. Harry R. Hummer, Supt.
Pennsylvania...	Doylestown	May 5.....	Reconstr. the sewage disp. beds of the Doylestown Sewer Com.	Wm. Bishop, Supt.
West Virginia..	Huntington.....	May 8, 1 p.m.....	Constructing lateral 12-in. sewers in various streets.....	John Coon, Comr. Streets.
Kansas.....	Humboldt.....	May 8.....	Constructing 8, 10 and 12-in. vitrified pipe sewers.....	The J. L. Worley Co. Engrs.. K. C.
Ohio.....	Elyria.....	May 8, noon.....	Constructing sanitary sewers, estimated cost $27,000.....	C. S. Buth, Engr.
Ontario, Can...	Toronto.....	May 9, noon.....	Constructing about 13,196 lin. ft. low level interceptor.....	G. B. Geary, Mayor.
New York.....	Batavia.....	May 15, 10 a.m.....	Constructing sewage disposal plant.....	K. B. Mathes, Chm. Bd. Sew. Com
Oregon.....	The Dalles.....	May 15.....	Construct. a section of Dist. No. 1 sewer system, cost about $225,000.....	L. T. Boyle, City Engineer.
South Dakota..	Aberdeen.....	May 15, 8 p.m.....	Construct. 1,860 ft. of 8 and 12-in. pipe sewers.....	F. W. Raymond, City Auditor.
Wisconsin.....	Baraboo.....	May 17.....	Constructing trunk sewers, 3,000 lin. ft. 30 and 27-in. pipe....	A. H. Huebing, City Clerk.
California.....	**San Jose.....**	**July 3 .....**	**Construct septic tank for County hospital.....**	**City Clerk.**
			WATER SUPPLY	
Illinois.....	Toulon.....	Apr. 28, 7:30 p.m....	Constructing concrete storage reservior for water supply system; deep well and force pumps with appurtenances and connec..	Arthur Shinn, City Clerk.
Oklahoma.....	Oklahoma City..	Apr. 28.....	Sinking nine artesian wells in Tex., Cimarron & Beaver Counties	O. A. Brewer, Chm. S. B. Agr.
Florida.....	Fort Dade.....	Apr. 29, 10 a.m.....	Constructing extension of water system.....	Construct. Quartermaster, U.S.N.
New Jersey....	Skillman.....	May 1, 10:15 a.m....	Extending water system, together with necessary hydrants, gates, valves, etc., at Village for Epileptics.....	Jonas A. Fuld, Secy. Bd. Managers.
Sask., Can.....	Scott.....	May 1.....	Drilling a deep well.....	Geo. M. Phillips, Sec'y.
Minnesota.....	Slayton.....	May 1, 8 p.m.....	Constructing an extension to the water works system.....	B. H. Whitney, Village Recorder.
Minnesota.....	Cloquet.....	May 1, 8 p.m.....	Furn. 9,200 ft. 6-in. and 3,000 ft. 4-in. c. i. water pipe & 43 manh	J. A. E. Grenier, City Clerk.
W. Virginia....	Romney.....	May 1, noon.....	Installing system of water works. Est. cost $15,000.....	A. N. McKeever, Mayor
Minnesota.....	Mankato.....	May 1.....	Removing old boiler and furn. new boiler at pumping station..	A. H. Sherer, City Clerk.
North Dakota...	Grafton.....	May 1.....	Sinking a 6-in. artesian well.....	J. H. Johnson, City Auditor.
Ohio.....	Mansfield.....	May 2.....	Improv. w. w by install. add. pumping equipment.....	Board Control.
California.....	Corning.....	May 2.....	Constructing w. w. and sewer system, cost about $46,000.....	E. L. Randall, City Clerk.
New Jersey....	Rahway.....	May 3, 8 p.m.....	Furn. one 5,000,000 gal. horizontal, high-duty, cross-compound, crank and fly-wheel pumping engine.....	A. F. Kirstein, Supt. Bd. W. Comrs.
Ohio.....	Lakewood.....	May 9.....	Erecting an elevated steel tower on concrete base.....	E. R. Lieblein, Clk. Bd. Pub. Aff.
Ohio.....	Rockport	May 12.....	Constructing water mains.....	F. Feuchter, Clerk.
New York.....	New York.....	May 16, 11 a.m.....	Construct. portions of the city tunnel of the Catskill aqueduct..	Chas. Strauss, Pres. Bd. W. Sup.
Brit. Col., Can..	Vancouver.....	May 31, 4 p.m.....	Furn. steel pipe, . i. pipe; also 18-in. flexible joint c. i. pipe...	Wm. McQueen, City Clerk.
			BRIDGES	
New Jersey....	Rutherford.....	Apr. 28, 2:30 p.m....	Constructing a steel and concrete bridge over Passaic river....	John H. Burke, Chm. Bd. Chos. Fh.
Ohio.....	Cleveland.....	Apr. 29, 11 a.m.....	Elimination of grade crossings and building bridge over tracks..	John F. Goldenbogen, Clk. B. C. C.
Pennsylvania...	Danville.....	Apr. 29, 2 p.m.....	Construct. a reinforced conc. bridge near Washingtonville, 50-ft. clear span.....	Horace Blue, Clerk Co. Comrs.
Pennsylvania...	Bradford.....	May 1, 5 p.m.....	Construct. bridges and abut., repav. and construct. sidewalks..	E. C. Charlton, City Clerk.
Oklahoma.....	Muskogee.....	May 1.....	Constructing 35 county bridges.....	County Clerk.
Indiana.....	Lebanon.....	May 2, 1 p.m	Constructing and repairing 32 bridges.....	B. F. Hendricks, County Auditor.
Pennsylvania..	Lancaster.....	May 9.....	Constructing a concrete dam across Conestoga river at pumping station of water works.....	J. A. Leinbach, Clk. Water. Com.
			LIGHTING AND POWER	
Manitoba, Can.	Winnipeg.	May 1, 11 a.m.....	Furnishing ornamental lighting standards.....	Magnus Peterson Secy. Civic B. Con.
California.....	Benicia.....	May 1.....	Furn. elec. supplies for year ending June 30.....	Lieut-Col. J. W. Benet, Com. Officer.
Texas.....	Fort Bliss.....	May 1, 11 a.m.....	Installing electric lighting system.....	G. C. S. Quackenbush, Constr. Q.M.
Dist. of Col....	Washington.....	May 1, 2 p.m.....	Furn. 830 more or less c. i. lamp posts and acces.,special design	Cuno H. Randolph, Comrs.
Texas.....	Galveston.....	May 3.....	Installing 2 centrifugal pumping units of not less than 3,000,000 gals per day.....	W. D. Masterson, City Supt. Elec.
Tennessee.....	Gallatin.....	May 5, noon.....	Furn. Corliss engine; 2 gen.; 2 switchb.; 2 elec. oper. pumps..	E. L. Anderson, Chm. W. & L. Com.
Illinois.....	Yorkville.....	May 10, noon.....	Constr. a dam across Fox river; a power house with wheel pits, etc., complete.....	Fred W. Simpson, Secy.
California.....	Riverside.....	May 24.....	Franchise to run poles and line for conveying electric power on all roads of county.....	County Supervisors.
			FIRE EQUIPMENT	
New York.....	Rensselaer.....	May 8.....	Furn. 500 ft. 2½-in. fire hose.....	Salt, City Clerk.
New Jersey....	**Princeton.....**	**July 5.....**	**Furn. auto pumping engine.....**	**E. M. Updike, Chm. F. & W. Com.**
			MISCELLANEOUS	
Michigan.....	Grand Rapids...	Apr. 29, 3 p.m.....	Repairing and construct. piers at various habors in Michigan...	C. S. Riche, Lieut. Col. Engrs.
Ohio.....	Cleveland.....	Apr. 29.....	Furnishing lubricants to Water Department.....	I. O. Hoffman, Secy. B. P. Serv.
Massachusetts...	Gloucester.....	May 1, 4 p.m.....	Building sea wall at Stage Fort Park.....	Asa G. Andrews, Chm. B. P. Comrs.
Dist. Col.....	Washington.....	May 1, 2 p.m.....	Furnishing one two-passenger roadster motor car, gasoline type for use in Fire Dept.....	Cuno H. Randolph, Comr.
Connecticut....	Hartford.....	May 2, noon.....	Constructing new fire station.....	Geo. W. Sanford, Bldg. C. B. F. C.
New Jersey....	Haledon.....	May 2, 8 p.m.....	Collecting garbage for one year.....	Lawrence L. Hines, Boro. Clerk.
Pennsylvania...	Reading.....	May 3.....	Furn. sup. for fiscal year; clean. paved sts. and catch basins..	Caleb Steidner, City Clerk.
Pennsylvania...	Erie.....	May 8, 8 p.m.....	Constructing an incinerator plant complete.....	B. E. Briggs, City Engr.
Ohio.....	Cincinnati.....	May 10, noon.....	Constructing hospital buildings.....	Hannaford & Sons, Arch.
California.....	Oakland.....	May 11.....	Constructing city hall, value of contract $1,000,000.....	Frank R. Thompson, City Clerk.

STREET IMPROVEMENTS

Florence, Ala.—Council is considering improvement of Tombigbee, Tennessee and Court sts.

Marianna, Ark.—Bids will be received May 1 for $100,000 road improvement bonds.—R. L. Mixon, Chairman County Road Commissioners.

Phoenix, Ariz.—Bids will soon be asked for constructing portions of territorial highways.—J. B. Girard, Territorial Engineer.

Colton, Cal.—Plans are being considered for paving business streets.

San Luis Obispo, Cal.—City has rejected only bid received Apr. 10 for paving Osos st; new bids will be received May 1.

Washington, D. C.—American consular officer in European country has reported that firm in his district which crushes gravel for roads would like to learn of American crushers. Address No. 6554, Bureau of Manufactures.

Arcadia, Fla.—Citizens will vote May 16 on $10,000 bonds for street improvements.

Jasper, Fla.—Citizens will vote on $17,500 bonds for street and sidewalk improvements.

Atlanta, Ga.—Council has decided to reject all bids for paving North blvd.

Cedartown, Ga.—City is considering paving of Main st. from city hall to Gibson st.

Talbotton, Ga.—Talbot County will vote on $12,000 bonds for road construction.—R. A. Mizell, J. B. Matthews and J. D. Daniel, Commissioners of Roads and Revenues.

Taylorville, Ill.—Board of Local Improvements has ordered paving of 2d st. with vit. blocks, $11,595; also West Main Cross st., $6,519, and Webster st.—Jas. W. Dappert, Engineer.

Farmland, Ind.—Paving of Main st. with brick is being urged.

Hartford City, Ind.—Jones gravel road bonds in sum of $11,000 have been sold to Fletcher National Bank of Indianapolis.

Michigan City, Ind.—Board of Public Works has approved Engineer H. M. Miles' plans and specifications for pavements in number of streets.

New Castle, Ind.—Council has passed ordinances to pave eight different streets; total 28 miles.

Rushville, Ind.—County Commissioners are considering building of seven roads at cost of $150,000.

Valparaiso, Ind.—Taxpayers of Pleasant Township have voted to construct 16 miles of gravel road to cost about $77,000.

Burlington, Ia.—Council has instructed the City Engineer to prepare estimates for paving contracts on Arch, Spring and Smith sts.

Baltimore, Md.—Eastern Railway Supply Co., 413 American Bldg., desires 10-ton steam road roller.

Baltimore, Md.—City Engineer Fendall, with consent of the Board of Estimate, will begin within few weeks work of paving 31st st., Maryland Ave. to St. Paul St., with macadam over the cobblestones; if after being subjected to traffic the experiment proves satisfactory, Mr. Fendall will recommend that all residential streets be paved wtih macadam over cobbles.

Cumberland, Md.—Council has passed ordinances for paving four streets.

South Cumberland, Md.—Residents of Springvale st. are urging paving of that thoroughfare.

Holyoke, Mass.—Aldermen have voted $89,000 loan for permanent highway work.

Whitinsville, Mass.—Macadamizing of Church st. is being considered.

Benson, Minn.—Swift County Commissioners have appropriated $2,000 for extension of State highway.

Kearney, Neb.—Mayor J. W. Paterson has recommended need of good roads and clean, graded streets.

Atlantic City, N. J.—Council has decided to pave portions of 13 streets and nine alleys.

Reno, Nev.—Commissioners of Washoe and Ormsby counties have decided to build a road from Reno to Carson City, and thence to Lake Tahoe.

New Brunswick, N. J.—Board of Freeholders has rejected bids received for stone on the following roads: State st., Perth Amboy; St. George's ave., Perth Amboy; Woodbridge to Iselin, Menlo Park to Union County line.

Paterson, N. J.—Board of Works has passed ordinances for grading, curbing and guttering certain streets.

Perth Amboy, N. J.—Board of Aldermen has decided to pave Smith st., High to State st., with asphalt blocks; is also considering paving of three streets with bitulithic.

Vincentown, N. J.—Taxpayers have decided to expend about $4,500 in curbing and macadamizing full width of main thoroughfare.

Albany, N. Y.—Board of Contract and Supply has decided to ask for bids for improvement of three streets.

Herkimer, N. Y.—Engineer Wilbur has been instructed to prepare plans and specifications for pavement of South Washington st. between Eastern ave. and Smith st.

Ithaca, N. Y.—Tompkins County Board of Supervisors has decided to construct Freeville-Groton road, 4.49 miles, at cost of $51,200.—F. C. Evans, Superintendent.

Little Falls, N. Y.—State Highway Commission has signified its intention of paving center of East Main st. with asphalt macadam from Gulf bridge to Alexander st.

New York, N. Y.—Board of Estimate has adopted final plans for tunneling street under Fort George Hill to connect Broadway with 191st st. station of subway.

Niagara Falls, N. Y.—City Engineer F. S. Parkhurst, Jr., has prepared bids for paving of Portage road from Buffalo ave. to Main st.; seven different kinds of paving are specified; estimated cost about $70,000.

Kings Mountain, N. C.—Kings Mountain Precinct, Cleveland County, will vote May 16 on $25,000 bonds for road construction.

Pittsboro, N C.—Bids will be received May 5 for $5,000 street improvement bonds.—B. Nooe, Mayor.

Rich Square, N. C.—Rich Square Township will issue $30,000 bonds for road improvements.—Andrew J. Conner, Chairman Road Commissioners.

Washington, N. C.—New Hanover County will vote May 31 on $50,000 bonds for road and bridge construction.

Jolliette, N. D.—Joliette Township is considering purchase of 24-wheel scrapers.—Frank Emerson, Clerk.

Akron, O.—Board of Control has rejected all bids for construction of city sidewalks.

Bellefontaine, O.—Council has passed resolutions for construction of seven miles of sidewalk.—L. E. Pettit, Mayor.

Cincinnati, O.—County Commissioners have ordered plans and specifications for improvement of Country Club road, from Reading pike to Ohio pike, Silverton, at estimated cost of $5,011; also adopted Surveyor Cowan's plans and specifications for improvement of Bond road, Montgomery road to Camargo pike, at estimated cost of $17,510, and for macadamizing of extension of Struble road, from Pippin road to Hamilton pike, at estimated cost of $4,588.

Cincinnati, O.—Council has passed ordinance authorizing following bond issues: $7,700 for improvement of Terrace ave., $3,000 for Charlton st., $8,000 for Melrose ave., $7,500 for opening of 3d ave. and $6,000 for opening of Hoff ave.

Millersburg, O.—Bids will be received in about a month for paving 6,000 sq. yds. of streets.

Oklahoma City, Okla.—Because contractors bidding for contracts for $400,000 worth of paving failed to file analysis of the material they intended using Council has rejected the bids of seven firms; specifications will be readvertised and bids asked for.

Baker, Ore.—Citizens have voted $45,000 bonds for paving streets.

Johnstown, Pa.—Councils are considering paving resolutions amounting to $115,985.

Marysville, Tenn.—Bids will be received May 15 by Blouitt County Commissioners for bond issue for pike roads.

Georgetown, Tex.—Williamson County has voted $100,000 of bonds for road construction.

Itasco, Tex.—City will issue $5,000 street improvement bonds.

Normanna, Tex.—Normanna and Tuleta districts of Bee County have issued $25,000 bonds for road construction.

Norfolk, Va.—Board of Control has recommended the paving of Fairfax ave., Dundaff st. and Pembroke ave. at a cost of $15,842.—W. T. Brooke, City Engineer.

Richmond, Va.—Plans, specifications and estimates for proposed boulevard from William Byrd Park to Joseph Bryan Park are now in course of preparation by State Highway Commissioner P. St. Julien Wilson.

Olympia, Wash.—Council has passed ordinance for paving Main st.

Seattle, Wash.—Board of Public Works has approved plans for grading and curbing West Alaska and Hudson sts. and paving 4th ave. South and 36th st.

Seattle, Wash.—Board of Public Works has approved plans and specifications for brick paving on Terry ave. and East Olive st. and relaying planking on Maynard ave.

Spokane, Wash.—Petition for the paving of Washington st. from river, north to Waverly pl., at estimated cost of $71,500, has been filed with the City Clerk.

Huntington, W. Va.—Citizens will vote May 27 on $300,000 bonds to improve county roads.

CONTRACTS AWARDED

Decatur, Ala.—Paving streets, to Leftwich & Co., $7,784.

Mobile, Ala.—Paving Water st., to Jammison & Halowell, Montgomery, $31,457.

Hermosa Beach, Cal.—Improving Santa Fé ave., to P. S. Venable, Redondo Beach, $7,000.

Los Angeles, Cal.—Improving Commercial St., Alameda st. to the Los Angeles River, to Withers & Crites, $21,717; improving Jefferson st., Vermont ave. to Western ave., to Fairchild-Gilmore-Wilton Co., $31,003.

Long Beach, Cal.—To the Fairchild-Gilmore-Wilton Co., Pacific Electric Bldg., Los Angeles, for paving portion of Pine ave., $14,000.

Hartford, Conn.—Paving, to Southern New England Paving Co.; Farmington ave., 4,000 sq. yds., $1.35; Sheldon st., 4,300 sq. yds., $1.31, and Capitol ave., 6,150 sq. yds., $1.27; all with Bermudez asphalt; excavation, 2,450 cu. yds., 75c.—R. N. Clark, City Engineer.

New Britain, Conn.—Building concrete walks and curbs, to Nicola Bellini, 65c. and 35c. per lin. ft.

East St. Louis, Ill—Paving 7,175 sq. yds. on 38th st. with brick, to Myers Construction Co., $1.72; other bidders: Gaynord & Sweeney, $17,316.25; Meyers & Thomas, $1,688.06; Walter Coonan, $17,404; Engineer's estimate, $15,811.50; setting 4,675 lin. ft. curbing, to same, $3,272.50; other bidders: Gaynord & Sweeney, $3,506.25; Meyers & Thomas, $3,412.75, and Walter Coonan, $3,459.50; improvement of alley, Collinsville ave. to Main st., to C. A. Horn Construction Co., $1,299.80; Engineer's estimate, $1,400.—Jas. F. Parr, Assistant City Engineer.

Oak Park, Ill.—Constructing 7,480 sq. yds. of asphaltic concrete pavement and 3,990 lin. ft. of granite concrete combined curb and gutter on Linden ave., between Chicago ave. and Augusta st., and on Iowa st., between Oak Park and East aves., to Standard Paving Co., 145 La Salle st., Chicago.

Lafayette, Ind.—To D. H. Falout, Indianapolis, for construction of Gaylord road in Wabash Township, $3,225, and for two gravel roads, to Mahoney & Allen, Green Castle, $6,740.

Rushville, Ind.—Building two county roads, to O'Connor Bros., city; one road, to Colter Bros.; total about $31,803.

Centerville, Ia.—Brick and concrete paving, to Beebe Bros., Omaha, Neb., $1.49 per sq. yd. for complete paving, $1.925 per sq. yd. for brick paving, and 38c. per lin. ft. for cement curbing; total $12,364.

Cresco, Ia.—Constructing 11,500 sq. yds. of cement concrete paving, to Concrete Construction Co., Cedar Rapids, $1,358 per sq. yd.; other bidders: Fraser & Daufault, Rochester, Minn., $1.44; Dearborn & Jackson, Cedar Rapids, $1,495; St. James Tile Mfg. Co., St. James, Minn., $1.42; C. B. McNamara Co., Dubuque, $1.44; Keruty & Co., Dubuque, $1.48; Decorah Cement Sidewalk Co., Decorah, $1.43; building 5,500 lin. ft. cement curbing, to Decorah Cement Sidewalk Co., 23c.

Ft. Scott, Kan.—Constructing 2½ miles rock road, to Midland Construction Co., $4,050 per mile.

Baltimore, Md.—Paving Gough st. and Highland ave., to the George Long Contracting Co., 1st st. and 1st ave., $4,812 and $17,033, respectively; other bidders: F. E. Schneider, $5,261 and $18,721; P. Reddington & Sons, $5,146 and $17,385; Hines & Hayman, $5,438 and $18,494; D. M. Andrew Co., $5,127 and $18,256.

Cambridge, Md.—Improving streets, using Mack block, to Field, Barker & Underwood, Arcade Bldg., Philadelphia, Pa., at $47,208; other bidders: Ambler Davis Co., Harrison Bldg., Philadelphia, $51,027; Martin J. Beach, American Bldg., Baltimore, $56,073; W. M. Elder, Low Bldg., Baltimore, $49,774; David M. Andrews, 26th st. and Mt. Vernon ave., Baltimore, $45,996; United Paving Co., Bartlett Bldg., Atlantic City, N. J., $52,620; Thomas S. Holt, Federalsburg, Md., bidding on curb and gutter only, $7,370; Rock Paving Co., Easton, $10,430.

Boston, Mass.—Repairing artificial stone sidewalks in any street within city limits, to C. W. Dolloff & Co.

Boston, Mass.—Constructng 8,000 ft. of macadam road in Granby, extending the 1908 highway toward Belchertown, to C. E. Horne, Millbury, $8,322; other bidders: R. F. Hudson, Wilmington, $8,458; Lane Construction Corporation, Meriden, Conn., $8,768; F. J. Mague, West Newton, $8,791; F. E. Ellis, Melrose, $8,793, and Michael L. Carmarco, Lee, $8,865; building 4,300 ft. of oil macadam road in Tyngsboro, northwesterly from the section built in 1910, to H. W. Tarbell, $7,006; other bidders: Frank Williams, $5,494; F. E. Ellis, Melrose, $7,257; F. J. Mague, West Newton, $7,402; R. F. Hudson, Wilmington, $7,461, and Martin & Condon, Watertown, $7,975; building macadam roadway in Greenwood st., Dorchester District, to J. C. Coleman & Sons Co., $13,261; other bidders: Connolly & Diamond, $13,501 with local stone, and $13,770 with trap rock; James Doherty, $13,859 and $13,904; William J. Rafferty Co., $14,116 and $14,205; John F. O'Connell, $14,369 and $14,548; D. M. Biggs & Co., $15,510 and $15,953; John McCourt & Co., $13,756 and $13,801; John Kelly & Co., $13,651 and $13,987; Daniel E. Lynch, $16,788 and $17,236.

Hastings, Neb.—Paving Hastings and Burlington aves., to E. R. Bing, $1.88 per sq. yd.; Hastings brick will be used.

Jersey City, N. J.—By Hudson Boulevard Commissioners, to Buffalo Steam Roller Co. for furnishing 15-ton Buffalo-Pitts standard steam macadam roller, bidding $3,500, less allowance of $600 for two condemned rollers; Austin Western Co., Ltd., bid $2,900 for 12-ton roller, and Henry Frank, Jr., $3,500 for 15-ton Monarch roller, allowing only $300 for two condemned rollers.

Metuchen, N. J.—Resurfacing Main st., to Liddle & Pfeiffer, Perth Amboy.

New Brunswick, N. J.—Furnishing rock by Freeholders, to Delaware River Quarry and Construction Co.: Iselin and Oak Tree road, $1.48 per ton; Livingston ave. to Livingston Park, $1.40; New Brunswick to the Three Mile Run, $1.65; Monmouth Junction to Kingston, $1.85; Monmouth Junction to Dayton, $1.85; New Brunswick, $1.85; Dayton to the Mercer County line, $1.90; Cranbury road, the Union Valley line, $1.85; South River to South Amboy, $1.65; Highland Park to Metuchen, $1.54; Adequect to Plainsboro, $1.90; Bridge st. Stevens ave., South Amboy and Morgan road, $1.90; Landing Bridge to New Market, $1.60; East Rahway to the county line, $1.65; to F. R. Upton Co., for stone to be supplied on Dunellen and Bound Brook road.

Paterson, N. J.—Repairing asphalt streets, to Geo. Bracket, $1.15 per sq. yd.; concrete work, $7 per yd.

Trenton, N. J—Paving 2d st., to the Filbert Paving and Construction Co., $37,691.40; to the McGovern Co. was awarded the following contracts: Hoffman st., $2,542; Genesee st., $41,433.75; Mercer st., $3,121.75; Whittier ave. $3,835.20; Prospect st., $2,031.60; Charles st. $2,334.90; Ferry st., $8,820; all to be paved with Filbertine; Allen st. job, to Filbert Co., $2,835.91.

Washington, N. J.—Macadamizing Washington, Asbury and Imlaydale roads, to Salmon Bros., Netcong, $49,307.

Brooklyn, N. Y.—Regulating and repaving with granite Myrtle ave., to J. J. Durkin, 1 Madison ave., New York City, as follows: 6,660 sq. yds. granite pavement, with tar and gravel joints, outside railroad area, one year's maintenance, $2.25; 1,380 sq. yds. granite pavement, within railroad area, no maintenance, $2.55; 30 sq. yds. old stone pavement, relaid, 60c.; 1,150 cu. yds. concrete for pavement foundation outside railroad area, $4.40; 235 cu. yds. concrete for pavement foundation within railroad area, $4.40; 5,210 lin. ft. new curb set in concrete, 90c.; 180 lin. ft. old curb reset in concrete, 20c.; 1,310 sq. ft. new granite bridgestone, outside railroad area, 75c.; 300 sq. ft. new granite bridgestone, within railroad area, 75c.; 250 sq. ft. old bridgestone relaid, 22c.; total $32,601; totals of other bids: R. L. Russell, 186 Remsen st., Brooklyn, $36,393; M. J. O'Hara, 557 3d st., Brooklyn, $35,406; MacFarlane Contracting Co., 165 9th ave., Brooklyn, $34,530; M. T. Meagher, 15 Orient ave., Brooklyn, $37,034; H. P. George, 49 Washington ave., Richmond Hill, L. I., $35,925; H. J. Mullen, 289 Fulton st., Jamaica, $35,886; Modern Pavement Co., 206 Broadway, New York City, $33,886; Norton & Gorman, 301 Douglass st., Brooklyn, $35,200; regulating and repaving with asphalt on a concrete foundation roadway of Fulton st., to Brooklyn Alcatraz Co., 407 Hamilton ave., as follows: 16,730 sq. yds. asphalt pavement, outside railroad area, five years' maintenance, 83c.; 2,825 sq. yds. asphalt pavement within railroad area, no maintenance, 83c.; 30 sq. yds. old stone pavement to be relaid, 40c.; 2,325 cu. yds. concrete for pavement foundation outside railroad area, $4.65; 395 cu. yds. concrete for pavement, foundation within railroad area, $4.65; 9,330 lin. ft. new curb set in concrete, 95c.; 1,600 lin. ft. old curb reset in concrete, 55c.; 119 noiseless covers and

heads complete for sewer manholes, $13; total, $40,181; totals of other bids: Barber Asphalt Paving Co., 30 Church st., New York City, $41,109; Cranford Co., 52 9th st., Brooklyn, $40,340; Uvalde Contracting Co., 1 Broadway, New York City, $44,487; regulating and repaving with granite on a concrete foundation 5th ave., 6,210 sq. yds., to J. J. Durkin, 1 Madison ave., New York City, $27,832.

Poughkeepsie, N. Y.—Wood block pavement on Washington st., to Jersey Paving Co., represented by J. M. Scheffler; wood block, Barber asphalt, $2.74, and for the United States Wood Preserving Co.'s block, $3.01; type of block will be decided by City Engineer Harding.

Rochester, N. Y.—Brick pavement on Sheridan st., to Wm. H. Sours, Second, $4,499.

Utica, N. Y.—To Harry W. Roberts & Co. for repairs to asphalt paved streets as follows: For sheet asphalt, including excavation, grading, concrete foundation, binder and top coat and all incidental work, $2.25 per sq. yd.; for resurfacing sheet asphalt, including top coat, $1.30 per sq. yd.; for extra binder in place, $8 per cu. yd.

Grand Forks, N. D.—Laying paving in District No. 15, to Blome Paving Co.

Canton, O.—Improvement of streets: Hartford st., to Turnbull & Son, $5,489; to same contractor for Winfield ave., $6,689; to Downs & Campbell for E. 4th st. and Georgetown road, $5,481, and to John Skeels, E. 10th st., $8,705.

Caldwell, O.—Improving county road, to Nixon & Juniper, Nelsonville, O., $10,302.

Cleveland, O.—Constructing Wooster Pike No. 3, to Baldwin Bros., Rose Bldg., Cleveland, $30,105; other bidders: Gould & Maybach, $31,365; Enterprise Paving and Construction Co., $31,166; Cleveland Trinidad Paving Co., $34,809.

Steubenville, O.—Paving, grading and curbing portions of Wilson ave., Wells and Slack sts., to John O. Bates, $6,257.

Youngstown, O.—Paving as follows: Duquesne st., to Youngstown Construction Co., $5,411; Breaden st., to Mullin & Quinn, $10,522; Superior st., to A. Colucci, $12,558; Oak st., to A. O'Haro, $27,441; Logan ave., to S. H. De Grobdt, $35,766.

York, Pa.—County Commissioners have approved contract awarded by State Highway Department to Reilly, Fritz & Co., Lancaster, for construction of about six miles of good roads in Springfield Township at cost of $40,921.41.

Dallas, Tex.—Paving Pennsylvania ave. with bitulithic material, to Texas Bitulithic Co., $2.30 per sq. yd.; McKinney and Cochrane aves. with creosoted wood block, to Creosote Wood Block Paving Co., $2.85 per sq. yd.

Fairfax, Va.—Juniata Paving Co. has been authorized to begin construction of a highway from Fairfax Courthouse to District line by Board of Supervisors of Fairfax County.

Fredericksburg, Va.—By Road Commissioners of Spotsylvania County for two miles of macadam road from Gayles' Run to the court house, to L. R. Colbert.

Centralia, Wash.—Grading and constructing hard surface pavements, to the Lister Construction Co., Tacoma, $56,242.

North Yakima, Wash.—To Warren Construction Co., Portland, for laying of bitulithic pavement and construction of concrete sidewalks, curbs and gutters in the West Yakima improvement district and the Pleasant ave. improvement district; cost about $15,000.

Seattle, Wash.—Grading North 82d st., to J. Kalberg, 5204 10th ave., N. E., $15,416; planking Western ave., to Hansen & Co., 4102 25th ave. S. W., $9,248.50.

Spokane, Wash.—For 1,600 bbls. of cement, to F. T. Crowe & Co. and the Union Fuel and Ice Co., $2.40 per bbl.; for approximately 175,000 ft. of lumber, to McGoldrick Lumber Co., $1,986; 150 bbls. of asphalt, to the Union Oil Co. of California, $23 a ton; 80,000 lbs. of pig lead, to Crane & Co., $6.02½ per 100 lbs.

Monroe, Wis.—Paving Jefferson st. with Barr block, vit. brick and cement filler, to T. W. Quinn, Madison, $1.79 per sq. yd.

Racine, Wis.—Gravelling streets, to T. H. Gharrity, $4,410.20.

Renfrew, Ont., Can.—Season's supply of cement, to E. J. McGarry, $1.55 in cotton bags to be returned.

BIDS RECEIVED

Los Angeles, Cal.—Rife, Cane & Frenzell are lowest bidders for highway work on San Fernando road from Burbank to the vicinity of Newhall tunnel, a distance of 13 miles; $80,204.42 if crushed rock is delivered on cars or $82,806.92 if rock is delivered on wagons; for construction of a section of Foothill blvd. in the vicinity of Azusa, Pete Walker bid $21,682.12, which was nearly $2,000 under the bid of Bent & Pennebaker.

San Diego, Cal.—Paving with asphalt portions of (a) D and (b) F sts.: Barber Asphalt Paving Co., 7th and Hooper sts., San Francisco, (a) 17c., (b) 19c.; Fairchild, Gilmore & Wilton Co., Pacific Electric Bldg., Los Angeles, (a) 15 9-10c., (b) 18 4-10c.

Fort Wayne, Ind.—Clay st., Columbia to Berry, per lin. ft., Barber Asphalt Co., $8.93; Central Paving Co., Boston block, $8.60; Moellering Construction Co., $8.98; preliminary order for asphalt; Clay st., Berry to Washington, Barber Asphalt Co., $8.24; Central Paving Co., $7.70; Moellering Construction Co., $8.29; preliminary order for asphalt entered; Clinton st., Wallace to Pontiac, Barber Asphalt Co., $7.73; Moellering Construction Co., brick, $7.79; Asphalt Block Co., 3-in. block $9.13, 2½-in. block $8.81, 2-in. block, $8.51; preliminary order for asphalt entered; John st., Creighton ave. to Pontiac st., Barber Asphalt Co., $7.16; Central Paving Co., brick, $7.50; Moellering Construction Co., brick, $7.20; Asphalt Block Co., $8.66, $8.34, $8.04; preliminary order for asphalt entered; Park ave., Broadway to Thompson, Barber Asphalt Co., $6.80; Central Paving Co., brick, $6.77; Moellering Construction Co., brick, $6.95; Asphalt Block Co., $8.30, $8.01, $7.74; preliminary order for asphalt; Runnion ave., Main to High, Barber Asphalt Co., $8.28; Central Paving Co., brick, $7.80; Moellering Construction Co., brick, $8.40; F. D. Kruse, Metropolitan block, $8.07; preliminary order for shale brick; Schick st., Wayne to Maumee, Barber Asphalt Co., $6.58; Central Paving Co., brick, $6.90; Moellering Construction Co., brick, $6.66; Asphalt Block Paving Co., $7.90, $7.63, $7.28; preliminary order for asphalt; Spy Run, St. Mary's River to Elizabeth st., per sq. yd., Barber Asphalt Co., $1.76; Central Paving Co., brick, $1.72; Moellering Construction Co., brick, $1.79; Asphalt Block Paving Co., $2.44; preliminary order for shale brick; Spy Run ave., from Elizabeth st. to State st., per sq. yd., all bids same as previous contract except Central Paving Co., which bid $1.74; Spy Run, State st. to Feeder Canal bridge, all bids same as previous contract; preliminary order for shale brick.

Lexington, Ky.—Improvements of paving on College View ave., Central Construction Co., only bidder, $2,797.50; macadam street with asphalt binder, $1.35 per sq. yd., with the same price for excavation; total cost with the binder, $3,642.50.

Newark, N. J.—Granite paving: Ogden st., Jersey Paving Corp., lowest bidder, $18,346, and Malvern st., Delancy st. and Tyler st., J. F. Shanley Co., lowest bidder, $47,248, $42,041 and $34,792, respectively; brick paving: South 17th st. and 14th ave., Newark Paving Co., $40,718 and $22,224, respectively; Vincent st., Jersey Paving Corp., $9,762; Bigelow st., McMahon Construction Co., $7,961, and S. 14th st., Van Keuren & Son, $36,930; bitulithic: Clifton ave., Madison ave., Mapes ave. and Sherman ave., Standard Bitulithic Co., $15,039, $30,813, $13,500 and $31,938, respectively.

Brooklyn, N. Y.—Regulating and paving with asphalt on concrete foundation the roadway of 52d st., from 13th to 16th aves., Barber Asphalt Paving Co., $12,572; Brooklyn Alcatraz Asphalt Co., $11,138; Cranford Co., $11,175; Uvalde Contracting Co., $11,462; regulating, grading, curbing and laying sidewalks on 8th ave., from 62d st. to Bay Ridge ave., M. J. O'Hara, $15,821; J. J. Schneider, $15,018; Napola Caponi, $21,077; Seaboard Construction Co., $19,657; Chas. J. Vofri, $14,685; P. S. Hickey, $12,003; McCauley & Manton Co., Inc., $14,986; regulating and paving with asphalt on a concrete foundation roadway of Caton ave., from Cauley & Manton Co., Inc., $14,896; regulat- Asphalt Paving Co., $12,160; Brooklyn Alcatraz Asphalt Co., $10,467; Uvalde Contracting Co., $12,278; Cranford Co., $10,714; regulating, grading, curbing and laying sidewalks on 68th st., from 4th to Fort Hamilton ave., W. W. Gorman, $19,885; J. J. Schneider, $17,239; Charles J. Vofri, $16,130; P. S. Hickey, $17,566; Seaboard Construction Co., $23,265; McCauley & Manton, $18,867.

Mt. Vernon, N. Y.—Regulating, grading and improving of Prospect ave: James Piro, new curb 65c., old curb 35c., brick pavement on 4-in. concrete $2.20, brick pavement 50c., macadam $1, new flag 70c., old flag 10c., brick pavement on 6-in. concrete $2.35; Guarino & Covino, new curb 75c., old curb 35c., brick pavement on 4-in. concrete $2.20; brick pavement 50c., macadam $1, new flag 65c., old flag 9c., brick pavement on 6-in. concrete $2.35; Frank Nordone, new curb 68c., old curb 45c., brick pavement on 4-in. concrete $2.20, brick pavement $1.29, macadam 95c., new flag 62c., old flag 10c., brick pavement on 6-in. concrete $2.30; Louis Petrillo, new curb, 78c., old curb 35c., brick pavement on 4-in. concrete $2.25, brick pavement 78c., macadam 95c., new flag 63c., old flag 9c., brick pavt. on 6-in. concrete $2.30; J. A. Sillery, new curb 70c., old curb 35c., brick pavement on 4-in. concrete $2.25, brick pavement $1.10, macadam $1.05, new flag 65c., old flag 8c., brick paving on 6-in. concrete $2.40.

Utica, N. Y.—Paving Mary st., 3d ave. to Mohawk st., asphalt, with artificial stone curb, $6,071.10; with natural stone curb, $6,726.30; Knox st., West ave. to City st., asphalt, with artificial curb, $1,731.90; with natural stone curb, $1,918.20; Hickory st., West ave. to York st., asphalt, with artificial curb, $9,246, with natural stone curb, $10,212; Kirkland st., State to Sunset ave., asphalt, with artificial curb, $10,881.10; with natural curb, $12,034.30; Humbert ave., Mohawk st. to George pl., asphalt, with artificial curb, $5,226.50; with natural curb, $5,807; Young pl., Humbert ave. to South st., asphalt, with artificial curb, $2,434.50; with natural curb, $2,703; Fay st., Lafayette to Columbia st., asphalt, with artificial curb, $2,509.10; with natural curb, $2,730.80; Canal st., Breese to Schuyler st., asphalt, with natural stone curb, $8,599.30.

Dayton, O.—Furnishing 10 car loads of asphalt to be used in repair of streets this spring and summer: Barbour Asphalt Co. submitted low bid of $23 per ton on Trinidad asphalt; bids of the other concerns were all upon refined asphalt and were as follows: American Asphalt and Rubber Co., Chicago, $25.81; the Union Oil Co., California, $26.90; Warren Bros., $28.50, and the Globe Asphalt Co., Pittsburg, $28.50.

Philadelphia, Pa.—Paving portions of 12 streets, recently opened in various sections of the city with asphalt; streets require foundations and asphalt covering, and provide for guarantee for five years; Filbert Co., $1.65 per sq. yd.; Barber Co.'s bid ranged from $1.71 to $1.99; repairs to other than asphalt streets, bids on granite block are Filbert Co., 22c. per sq. yd.; R. C. Bennis, 23c.; American Paving and Construction Co., 27c.; Mack Paving and Construction Co., 32c.; Cunningham Paving and Construction Co., 25c.; vit. brick, Bennis, 28c.; American Co., 37c.; Mack Co., 42c.; Cunningham Co., 27c.; cobble rubble paving, Bennis, 25c.; American, 50c.; Filbert, 25c.; Mack, 30c.; Cunningham, 27c. per sq. yd.

Austin, Tex.—Paving (a) 45,000 sq. yds., (b) rock excavation, (c) dirt excavation: Texas Bitulithic Co., (a) $2.21, (b) $3, (c) 35c.; Turner & McDonald, granitoid, (a) $1.85, (b) $2, (c) 45c.; creosoted wood block paving, (a) $2.45, (b) $1.50, (c) 45c.; Texas Grading Co., wood blocks, (a) $2.44, (b)

Lawton, Okla.—Bids received Apr. 10 for paving: (A) C. N. Shaw & Co., city, awarded contract, $156,319.39; other bidders: (B) E. K. Kerby, city, $165,180.46; (C) C. I. Derr, Oklahoma City, $173,643; (D) Mayfield, Shaw & Resman, city, $158,294.99; (E) Engineer's estimate, $179,002.17.

	A	B	C	D	E
21,036 cu. yds. excavation, 2,000 ft. free haul	$0.23	$0.30	$0.32	$0.32	$0.32
75,489 sq. yds., Oklahoma Nat. Rock Asphalt Paving	1.69	1.74	1.82	1.68	1.85
20,936 lin. ft. straight comb. curb and gutter, stone cushion	.70	.90	.90	.75	1.00
20,936 lin. ft. straight comb. curb and gutter, gravel cushion	.70	.88	.90	.75	...
3,115 lin. ft. radius comb. curb and gutter, stone cushion	.72	.90	1.00	.75	1.10
3,115 lin. ft. radius comb. curb and gutter, gravel cushion	.70	.88	1.00	.75	...
2,236 lin. ft. straight curb, stone cushion	.60	.50	.60	.50	.65
2,236 lin. ft. straight, curb,gravel cushion	.58	.48	.60	.50	...
7,652 lin. ft. straight gutter, stone cuhion	.55	.50	.60	.50	.65
7,652 lin. ft. straight gut. gravel cushion	.55	.48	.60	.50	...
333 lin. ft. radius gutter, stone cushion	.60	.50	.70	.50	.70
333 lin. ft. radius gutter, gravel cushion	.60	.48	.70	.50	...
3,982 lin. ft. marginal curb, 3 x 12 oak header	.10	.20	.10	.10	.10
39 catch basins	17.50	20.00	20.00	25.00	25.00
440 lin. ft. 8-in. vitrified sewer pipe	.40	.40	.50	.50	.50
10 in. sewer pipe, if substituted	.40	.50	.60	.60	...
12 in. sewer pipe, if substituted	.40	.60	.70	.70	...
Number of days for completion	200	180	180	200	

$1.50, (c) 45c.; vit. brick, (a) $2.57, (b) $1.50, (c) 45c.; J. O. Polhemus, wood blocks, (a) $2.46, (b) $2, (c) 40c.; vit. brick, (a) $2.15, (b) $2, (c) 40c.; Knox T. Johnson, wood blocks, (a) $2.20, (b) $1.50, (c) 50c.; vit. brick, (a) $1.05, (b) $1.50, (c) 50c.; concrete, (a) $1.75, (b) $1.50, (c) 50c.—John O. Johnson, City Clerk.

Portsmouth, Va.—Construction of the county's portion of proposed new macadam road through Lafayette Residence Park, Tanners Creek District, from limits of City of Norfolk to Cottage Toll Bridge road; E. Parke Lindsay, Portsmouth, lowest bidder, 74½c. per sq. yd.; road is about three-quarters of a mile in length; R. P. Denby, Norfolk, bid 81c. per sq. yd., and Dalby, Nottingham & Co., Portsmouth, 77c. per sq. yd.

Platteville, Wis.—Constructing 8,880 sq. yds. of paving: Thomas W. Quinn, $1.82 per sq. yd. for brick, total bid $19,030; Thomas E. Woolley, reinforced concrete, $1.39 per sq. yd., total $14,334; asphalt macadam, $1.82 per sq. yd., total $18,153; sarcolithic $1.82 per sq. yd., total $18,153.

SEWERAGE

Fayette, Ala.—City is considering construction of sewer system.

Oxford, Ala.—Citizens will vote April 22 on $12,000 bonds for sewerage system.

Bakersfield, Cal.—City Engineer C. Greeley has prepared plans for construction of public sewer in District No. 15, estimated to cost $27,500; also plans for similar sewer in District No. 16; cost $27,500.

Santa Barbara, Cal.—Council has ordered construction of vit. pipe sewer in Carrillo and Anacapa sts.

New Britain, Conn.—Council is considering $40,000 bond issue for proposed sewer work.

Arcadia, Fla.—Citizens will vote May 16 on $20,000 bonds for construction of sewer system.

Jasper, Fla.—Citizens will vote on $10,000 bonds for construction of sewer system.

Fort Valley, Ga.—Citizens will vote April 20 on $35,000 bonds to lay sewerage system and make other improvements.

New Iberia, La.—Establishment of sewer system is being considered.

Holyoke, Mass.—Board of Aldermen has voted $13,000 loan for permanent sewer work.

Quincy, Mass.—City has sold $30,000 sewer bonds to Parkinson & Burr.

St. Paul, Minn.—Board of Public Works has rejected all bids for Dearborn st. sewer.

Kearney, Neb.—Mayor J. W. Paterson has recommended formation of sewer district.

Garwood, N. J.—Council is considering ordinances for extension of sewer system.

Haledon, N. J.—H. J. Harder, Paterson, is completing plans for sewers and sewage disposal plant; cost about $40,000.

Monmouth Beach, N. J.—Borough Council has decided to construct sewer system. —J. P. Manahan, Mayor.

Paterson, N. J.—Board of Works has passed ordinance for constructing number of lateral sewers in various sections of city.

Plainfield, N. J.—State Board of Health has decided against North Plainfield's plans for sewage disposal plant which called for location of sewage beds in North Plainfield Township.

Syracuse, N. Y.—Council is considering installation of system of sewers for Huntley tract and parts of Third and Fourth wards.

Marion, O.—Council has passed ordinance for constructing sanitary sewer and cellar drain: 1,300 lin. ft. of 6-in. and 8-in. vit. pipe and five manholes needed.—Pearl R. Mears, City Engineer.

Tiffin, O.—Council has ordered City Engineer to prepare plans for sewers on 2d, 1st, Washington and Grand aves.

Drain, Ore.—Citizens have voted $5,000 bonds for sewers.

Portland, Ore.—Council has adopted resolution authorizing the City Engineer to prepare and file plans for proposed Columbia trunk sewer to drain Woodlawn, Vernon and other thickly settled districts.

Chester, Pa.—Installation of sewers and disposal plant is being urged.

Masontown, Pa.—Chester & Fleming, Union Bank Bldg., Pittsburg, are preparing plans in connection with City Engineer E. C. Baker for sewage disposal plant.

York, Pa.—Bids will be asked by Highway Committee of Council for storm water sewers on Vine st. and extension of Jackson st. sewer.

Aberdeen, S. D.—Citizens have voted $200,000 bonds for sewerage extension purposes.

Madison, S. D.—Citizens have voted $65,000 sewerage bonds.

Newport, Tenn.—Citizens will vote April 29 on $50,000 bonds to build system of sewerage and water works.

Groveton, Tex.—Trinity County is considering election on $150,000 road bonds.

Longview, Tex.—Citizens have voted $90,000 bonds for paving streets and purchasing sewer system.

Tazewell, Va.—Tazewell County has voted $625,000 bonds for good roads.

Seattle, Wash.—Board of Public Works has approved plans for sewering Meridian ave.

Seattle, Wash.—Board of Public Works has adopted plans for sewering East 71st st.

South Bend, Wash.—Contract will be let in about 30 days for pipe and concrete trunk sewers; cost about $20,000.—Chas. H. Mills, City Clerk.

CONTRACTS AWARDED

Attalla, Ala.—To J. L. O'Conner, Knoxville, Tenn., to construct sewers costing about $30,000; Wilburn Hill, of Hazlehurst & Gadsden, Atlanta, Ga., will supervise work.

Los Angeles, Cal.—To S. M. Kerns for constructing vit. pipe sewer on Wilshire blvd., $5,375, and to Peter Grbovach for storm sewer in Humboldt and other streets, $15,500.

Freeport, Ill.—Building sewers: West Freeport sewer, to J. W. Turner, of Des Moines, Ia., $29,979, or $777.56 below the estimate; East Freeport, to Frank Komanski, Watertown, Wis., $14,967, or $1103 above the estimate.

Indianapolis, Ind.—To the American Construction Co. for sewer in Jackson pl., about $70,000.

Fort Leavenworth, Kan.—Sewer improvements at the fort, to A. J. Taussig Construction Co., St. Louis, $48,928.40; other bidders: McGuire & Stanton, $52.523.18; E. W. Geiger, city, $53,045; Boyd Construction Co., Kansas City, Kan., $52,000; John Barnes, Leavenworth, $56,987.

Hutchinson, Kan.—Building lateral sewer in District 38, to O. F. Davis.

Boston, Mass.—Building sewer in Morrison st., to Antony Cefalo, $1,490.01; other bidders: West Roxbury Trap Rock Co., $1,714.45; Murphy & Dolan, $2,069.49; McCarthy & Walsh, $2,288.05; Raffele Cartullo, $2,314.75; R. J. Young & Co., $3,913.20.

Northampton, Mass.—Furnishing sewer pipe to the city for the coming year, to W. H. Riley & Co., Boston, at 81.50 per cent. of list price.

Albert Lea, Minn.—To J. J. Connolly, St. Paul, for construction of sewer, $3,143; other bidders: Lars Overn, St. Peter, $5,250; Frazier & Danforth, Rochester, $4,250; Greene Bros., city, $4,315.48; Pastorett, Lawrence Co., Duluth, $4,522.18; Illstrup & Olson, Minneapolis, $3,910; Roberts & Few, Brookings, S. D., $4,581; detail bid of lowest bidder is as follows: 100 ft. 8-in. vit. pipe, 6 to 8 ft. trench, 70c.; 1,124.24 ft. 8 to 10 ft. trench, 80c.; 1,048 ft. 10 to 12 ft. trench, 88c.; 340 ft. 12 to 14 ft., $1.05; 698.12 ft. 14 to 16 ft., $1.15, and 155.88 ft., 16 to 18 ft., $1.45.—Wm. Barneck, City Engineer.

Brainerd, Minn.—Building sewers in northeast part of city and on Laurel st., to Pastoret-Lawrence Co., Duluth.

South Orange, N. J.—Construction of sewers for Hilton District, to J. J. Fusco, Montclair, $18,246; other bidders: Antonio Costa, Orange, $20,734; H. Spinach Construction Co., Waterbury, Conn., $21,511; Martin & Miller, Roselle Park, $22,471; Chas. Ippolito, Orange, $23,287; Pas. Cestone, Montclair, $23,803; J. F. Callahan, Elizabeth, $25,407; John Dorer, Irvington, N. Y., $28,108; Mason Hilton & Co., New York, N. Y., $31,951; Pas. Mauriello, Orange, $32,984.

Gastonia, N. C.—To P. R. Huffstetler and H. F. Oakley, city, to build sewer in Western part of city, $4,090.

Niles, O.—Building sewers in Sewer District No. 6, to Frank Mannella, 6941 Chaucer st., East End, Pittsburg, Pa., 18,551 cu. yds. earth excavation, 55c.; 188 cu. yds. brick masonry, $10; 2 3-10 tons of iron pipe $50; 750 lin. ft. 15-in. pipe, double strength, 42c.; 710 lin. ft. 15-in. pipe, 37c.; 384 lin. ft. 12-in. 25c.; 1,300 lin. ft. 10-in., 20c.; 11,750 lin. ft. 8-in., 14c.; 6,353 lin. ft. 6-in., 10c.; 1,500 lin. ft. 4-in. 70c.; total, $15,496.89; other bidders: Kimbrough & Elder, New Castle, Pa., $19,063.17; Burns Bros., New Castle, Pa., $16,324.98; C. L. Allen, Marion, $17,909.90; Jas. McCracken & E. W. Masters, Warren, $20,395.98; V. Mango & G. A. Gialdini, city, $19,302.09.

Chambersburg, Pa.—Building complete sewer system in town, about 16 miles of it to James Ferry & Son, Pittsburg, $160,154.43; to Cantrell Construction Co., Philadelphia, trunk line from disposal plant to Wolf ave., $22.953.85; disposal plant, to Pitt Construction Co., Pittsburg, $38,470.70.

York, Pa.—Building storm water sewer on South Richland ave., to General Supply and Construction Co., $3,606.20.

Seattle, Wash.—Laying sewers on Woodlawn ave., to Wm. Kopta, 1422 27th ave., $16,997.

Appleton, Wis.—Building sewer on three streets, to J. H. Wait, $2,885.

BIDS RECEIVED

Easton, Md.—Eleven bids for building proposed sewerage system were opened April 15; lowest was that of Hines & Hayman, Baltimore, $37,001.78, and the highest, William C. Evans, Ambler, Pa., $51,867.17.

Mt. Vernon, N. Y.—Construction of the lateral sewer on Cedar st.: J. A. Sillery, $1,700; James Charci, $2,325; Frank Nordone, $1,625; Sabino Guarino, $1,540; Tony Longo, $2,400; Louis Petrillo, $1,425; Sidney ave. sewer: Louis Petrillo, $488; J. A. Sillery, $275; Tony Longo, $400; James Charci, $410; Frank Nordone, $445; Sabino Guarino, $375.

Grandview Heights, O.—Construction of sewer system from plans of E. G. Bradbury, Columbus; John C. Beasley, Columbus, lowest bidder, as follows: 18,045 cu. yd. earth excav. in trench, 50c; 18,045 cu. yd. rock excav. in trench, $2.50; 173 cu. yd. brick masonry, $9; 42 cu. yd. concrete masonry, $10; laying 24,462 lin. ft. sewer pipe, 6c.; 81 c.-i. manhole tops, each, $9; 400 manhole steps, each, 30c.; M ft. sheeting left in, $16; sewer pipe, 81 per cent discount, $19,329; 336 Y poles, each 5c.; 17 tons c.-i. pipe, laid, $40; 15 flushing gates, each $4, 56 manhole pans, each $2; excav. (lump sum), river, $850; total, $18,708. Totals of other bids: Jas. Westwater Co., Columbus, $23,253, and C. T. McCracken & Co., Columbus, $19,508.

Niles, O.—Construction of the south side sewers; specifications, earth excavation, 18,551 cu. yds.; brick masonry, 188 cu. yds.; iron pipe 2 3-10 tons, 15-in. pipe, double strength, 700 lin. ft.; 15-in. pipe, 710 lin. ft.; 12-in. pipe, 384 lin. ft.; 8-in. pipe, 11,756 lin. ft.; 6-in. pipe, 6,353 lin. ft.; 4-in. pipe, 1,500 lin. ft.; Kembrough & Elder, New Castle, Pa., excavation 73c. per yd., brick masonry $11 per yd., iron pipe $45 per ton, 15-in. d.s. pipe 31c. per lin. ft., 15-in. pipe 25c. per lin. ft., 12-in. pipe 21c., per lin. ft., 8-in. 14c. per lin. ft., 6-in. 12c., 4-in. 15c., total $19,063.17; Frank Manel'a, Pittsburg, excavation 55c. per yd., brick masonry $10 per yd., iron pipe $50 per ton, 15-in pipe, d. s. 42c. per lin. ft., 8-in. pipe 20c. per lin. ft., 6-in. 14c. per lin. ft., 4-in. 7c. per lin. ft., total $15,496.89; Burns Bros., New Castle, excavation 54c. per cu. yd., brick masonry $15 per cu. yd., iron pipe $45 per ton, 15-in. d. s. pipe 35c. per ft., 15-in. pipe 27c. per ft., 12-in. 22c., 8-in. 19c., 6-in. 12c., 4-in. 6c. per ft., total $16,324.98; C. L. Allen, Marion, O., excavation 64c. per yd., brick masonry $10 per cu. yd., iron pipe $50 per ton, 15-in. d. s. pipe, 45c. per ft., 15-in. pipe 38c. per ft., 12-in. pipe 28c., 8-in. pipe 17c., 6-in. pipe 14c., 4-in. pipe 10c., total $17,909.90; James McCracken and E. W. Masters, Warren, excavation 75c. per cu. yd., brick masonry $10 per cu. yd., iron pipe $38 per ton, 15-in. d. s. 40c. per ft., 15-in. 36c., 12-in. 28c., 8-in. 22c., 6-in. 13c., 4-in. 9c. per ft., total, $20,395.98; V. Mango and G. A. Gialdini, Niles, excavation 71c. per cu. yd., brick masonry $9.50 per cu. yd., iron pipe $37 per ton, 15-in. d. s. pipe 50c. per ft., 15-in. pipe 44c. per ft., 12-in. pipe 32c. per ft., 8-in. 18c., 6-in. 14c., 4-in. 7c. per ft., total $19,302.09.

Moose Jaw, Sask., Can.—Pumps, sewer and water extension, sewerage disposal plant, etc.: Sewage disposal works, Manders Bros., Edmonton, $124,023; Geo. H. Archibald & Co., Winnipeg, $129,500; Flanigan & Murphy, $134,585; Navin Bros., Moose Jaw, $143,713; Moose Jaw Construction Co., $149,641; City Engineer, $146,306; Simple Concrete Piling and Construction Co., $139,000; sewage pumps, Canada Foundry Co., Toronto, $1,960; John MacDougall Iron Works, Montreal, $2,281; the Canada Land Co., Ltd., Montreal, No. 1, $4,615.24; the Canada Land Co. Ltd., Montreal, No. 2, $4,249.74; Canada Ford Co., Montreal, $4,825; supplying c.-i. pipe, Stanley Brock, Ltd., Winnipeg, (a) 6-in., $39.25, (b) 4-in., $39.25; Thompson Pipe Foundry (a) $40, (b) $40; Francis Hankin & Co., Montreal, (a) $41.40, (b) $41.95; H. A. Drury & Co., Ltd., Montreal, (a) $43, (b) $44.05; Moose Jaw Machine Works (a) $45.77, (b) $47.31; Whitlock & Marlatt, (a) $45.50, (b) $47.50; Chas. Miller & Co., (a) $45.60, (b) $45.60; S. D. Wood & Co., (a), $18.25, (b) $21; R. Cunningham (a) $50.47, (b) $50.47; Canada Foundry Co., (a) $42.50, (b) $42.50; Bissett & Loucks, (a) $45, (b) $45.60; sewer and water extensions, Navin Bros., Moose Jaw, $51.113; L. W. Schruth, Fargo, N. D., $56,519; C. J. Robinson, Moose Jaw, $52,774; H. G. McVean, Moose Jaw, $54,740; Flanigan & Murphy, Moose Jaw, $58,800; Ransom & Kilkenny, Moose Jaw, $63,000; C. J. Townsend, Toronto, $60,000; Mudies Bros., Edmonton, $66.917.75; City Eng., $55,743; sewer pipe, Dominion Sewer Pipe Co.,. $12,937.70; Saskatchewan Glass and Supply Co., $13,832.12; Whitlock & Marlatt, $13,531.18; Macomb Sewer Pipe Co., $14,597.24; Hamilton and Toronto Sewer Pipe Co., unit prices; D. F. Lee, $13,592.17; R. Cunningham, $14,890.28.

WATER SUPPLY

Aliceville, Ala.—City will grant franchise to City Water Co. for construction of water works; cost $10,000; A. S. Murphy can be addressed.—J. B. Cunningham, Mayor.

Mena, Ark.—City will improve water works at cost of about $60,000.—John Thompson, Chairman Board of Improvements.

Lindsay, Cal.—Haviland & Tibbetts, Alaska Commercial Bldg., San Francisco, have been selected to prepare plans for water works and sewers.

Ontario, Cal.—Erection of three reservoirs for the city's water system, to Simmons & Hayden, for the cement work, and to Oscar Coin for roofing of reservoirs; combined bid, $20,074.92.

San Diego, Cal.—Water Department will install about 15 miles of new mains; c.-i. pipe will be used, from 36-in. down.—H. R. Fay, Superintendent.

Fort Lupton, Col.—Citizens have voted $25,000 bonds to construct water system.

Norwood, Col.—Citizens have voted $12,000 bonds to install water works.

Olathe, Col.—Citizens have voted $50,000 bonds to install water system.

Arcadia, Fla.—Citizens will vote May 16 on $20,000 bonds for construction of water works.

Fort Valley, Ga.—Citizens will vote April 29 on $35,000 bonds to complete water works and make other improvements.

Preston, Ida.—Citizens have voted bonds for installation of water works.

Moline, Ill.—Plans for $30,000 filtration plant to supply arsenal with its supply of water are now being drawn by Captain H. B. Jordan and bids wil be advertised for as soon as specifications are completed.

Peru, Ind.—A. T. Maltby, Consulting Engineer, Great Northern Bldg., Chicago, Ill., will take charge of providing a new and increased water supply and rebuild water works plant.

Glen Rock, Ia.—Citizens will vote on $8,000 bonds to increase water supply.

Gilmore City, Ia.—Citizens have voted bonds for water works; cost about $12,000; engineer not yet selected.—H. C. Mormon, Town Clerk.

Elk City, Kan.—City will soon receive bids for installation of water works; L. Y. McFarland has prepared plans; cost about $25,000.

Emporia, Kan.—City is considering changing pumping from steam to electricity; will need about 2½ miles of transmission line, two 3,000,000-gal. pumps, also booster pump; bids will be asked early in May.—Matthew Brown, City Engineer; F. H. Smith, City Clerk.

Leavenworth, Kan.—Auxiliary water main from pumping station on the reservation to system of water mains in city is to be installed by Leavenworth City and Fort Leavenworth Water Co.; main will be 18-in. iron pipe.

Waterville, Kan.—Citizens have voted $30,000 bonds for installation of water works and an electric light plant.

Madisonville, Ky.—Articles of incorporation have been filed by the City Water Co.; capital stock $50,000; company will install water works system.

Baltimore, Md.—Baltimore County Water and Electric Co. will issue $111,000 of bonds for extension to water mains.—J. G. MacDonald, 100 W. Fayette st., Secretary.

Frostburg, Md.—Council will take up matter of larger water supply.

Athol, Mass.—City will expend about $20,000 to $30,000 on water works.—Jas. L. Tighe, Holyoke, Engineer; H. L. Heapgood, Chairman Water Works Commission.

Marquette, Mich.—Citizens will vote May 5 on $75,000 bonds for extension of intake pipe of water works.

Eveleth, Minn.—Council will advertise for bids for 2,500,000-gal. crank and flywheel shape pump.

North Mankato, Minn.—John Wilson, Mankato, has been selected to prepare plans for water works; cost about $20,000.

Shakopee, Minn.—Citizens have voted $10,000 bonds for water works improvements.

Tylertown, Miss.—Citizens have decided for private ownership of water and electric light plant; Board will let franchise to best bidder.

Cole Camp, Mo.—Citizens have voted $10,000 bonds for water works.—E. Schward, Mayor.

Bridgeton, N. J.—Council has decided that city utilize water from **Tumbling Dam** Park lakes and streams as approved by State Board of Health for city water supply; also passed ordinance providing for issuing of $75,000 bonds for installation of the new system, pumping station and filtration plant.

Stanhope, N. J.—Council has decided to build municipal water plant.

Trenton, N. J.—E. C. Hutchinson Water Co. has been organized to supply water to residents of Hamilton Township.—E. C. Hutchinson, Ella Hutchinson and S. T. Atchley, Incorporators.

New York, N. Y.—Water Commissioner Thompson is urging $2,500,000 appropriation for installation of filtration plant.

Massillon, O.—Citizens will vote in November on $150,000 bonds to build water works plant.

Braggs, Okla.—Plans are being prepared by Winters & Dove, 810 First National Bank Bldg., Fort Smith, Ark., for installation of water works.

Conveta, Okla.—City will extend water works system, including two miles of pipe line, auxiliary pumping plant and other improvements.—Winters & Dove, 810 First National Bank Bldg., Fort Smith, Ark., Engineers.

Kingfisher, Okla.—Citizens have voted $28,000 bonds for water works extension and for changing electric system from a single-phase to 3-phase system; the electric plant will also be enlarged.—V. H. Francis, Superintendent.

Waynoka, Okla.—Wm. Haviland, Alva, is preparing plans for water works and electric light plant.—C. D. Willard, Town Clerk.

Baker, Ore.—Citizens have voted $25,000 bonds for installation of 3,000,000-gal. reservoir and $90,000 for replacement of wooden flume from Salmon Creek to settling tank; bids will soon be asked for work.

Drain, Ore.—Citizens have voted $15,000 bonds for water works.

Springfield, Ore.—Council is considering construction of reservoir on Willamette Heights.

Blairsville, Pa.—Engineer O'Brien, Latrobe, is preparing plans for reservoir.

Bristol, Pa.—Council has rejected all bids received for furnishing materials and constructing complete water works system and filtration plant.

Catasauqua, Pa.—Town is considering construction of municipal water works system.

Oil City, Pa.—Water Commission has recommended that city expend $18,000 in improving pumping station.

Womelsdorf, Pa.—Womelsdorf Consolidater Water Co. will construct reservoir at foot of South Mountain, with a capacity of over 3,000,000 gals.

Dyersburg, Tenn.—Citizens will vote May 9 on $30,000 water and light bond.

Manchester, Tenn.—Citizens have voted $25,000 water works and electric light bonds.

Newport, Tenn.—Citizens will vote April 29 on $50,000 bonds to build system of water works and sewerage.

Obion, Tenn.—City is considering election on $25,000 bonds for construction of water works.

Terrell, Tex.—City Commission is considering bond issue for drilling artesian well.

Lehi, Utah.—Citizens have voted $20,000 bonds to complete water system.

Seattle, Wash.—Board of Public Works has approved plans for water mains on North 50th st. and 12th ave. N. W.

Seattle, Wash.—Board of Public Works has adopted plans for laying water mains on 25th ave. North.

New Lisbon, Wis.—Langstead & Myers, Appleton, are preparing plans for water works and electric light plant; cost $20,000.

Superior, Wis.—Council now has on hand proposition looking toward construction of water works plant by the city unless some favorable proposition is obtained on purchase of the plant of Superior Water, Light and Power Co.

Vancouver, B. C., Can.—City Engineer Burwell has estimated cost of installing water mains at Fort Grey at $10,500.

CONTRACTS AWARDED

Atlanta, Ga.—Fire hydrants, to Columbian Iron Works, of Chattanooga, Tenn.; filter house on Hemphill ave., to Geo. A. Clayton, $5,810.

Chicago, Ill.—To the Jas. A. Brady Foundry Co., 35th st. and Ashland ave., for furnishing and delivering to various pipe yards 200 tons of special castings, 4-in. to 12-in. diameter, and others, not to exceed 48-in.; furnishing water department 250 tons of valves from 4-in. to 24-in. and 2½ and 4-in. double flue hydrants; furnishing and delivering valve basins and five cistern covers to the various pipe yards of water department, to T. A. Cummings Foundry Co., 1338 Clybourne pl.

Lewiston, Ill.—Improving water works, consisting of furnishing and laying c.-i. pipe, furnishing and setting hydrants and valves, installing new pumping engine and constructing large shallow well from plans of Fuller-Coult Co., Chemical Bldg., St. Louis, Mo., to the Cook Construction Co., Des Moines, Ia., $6,801.

Lewiston, Ill.—Constructing the water works system, to the Cook Construction Co., Des Moines, Ia., $6,801.

Boston, Mass.—To Charles M. Callahan for laying water pipes in May st. and Geneva ave., Dorchester, and Old Colony ave., South Boston, $1,096.05; other bidders: Michael Russo, $1,967.25; William J. Rafferty & Co., $1,478.75; Daniel E. Lynch, $1,712.50; R. J. Young & Co., $2,057.50; Hugh McNulty, $1,490.05; Charles J. Jacobs Co., $1,570; John A. Costello & Co., $1,411.50; Louis Balboni, $1,384.50; Antony Cefalo, $1,632.50; Michael DeSisto & Co., $1,308.25; Murphy & Dolan, $1,436; Rafelle Cartullo, $1,422.25; Engineer's estimate, $1,535.50; laying water pipes in Electric ave. and Garden st., Brighton; Ardale, Guernsey and South Fairview sts., West Roxbury; Greenwood and Normandy sts., Rosemont road N. W. and Wales st., Dorchester, to same company, $1,064.90; other bidders: Michael DeSisto & Co., $1,204.15; Murphy & Dolan, $1,335; Antony Cefalo, $1,385.90; Thomas Burke, $1,194.50; R. P. Cushing, $1,881.80; John A. Costello & Co., $1,319.90; Charles J. Jacobs Co., $1,636.90; William J. Rafferty & Co., $1,513.75; Michael Russo, $1,939; Engineer's estimate, $1,502.50.

Boston, Mass.—Furnishing 500 Post hydrant boxes, 100 Lowry hydrant boxes, 700 gate boxes, 600 meter boxes and 50 blow-off boxes, to White & Kennelly, at $4.59 each for all kinds; other bidders: J. H. Ferguson, $4.65; Peter W. Hill, $4.80; D. M. Biggs & Co., $4.99; Jacobs & Eager, $5.05; J. C. Coleman & Sons, $5.37; Chas. M. Callahan, $5.40; W. L. Waples Co., $6.30, $6.85, $6.70, $6.25 and $7.25; Simpson Bros. Corporation, $7.48; 750,000 lbs. of No. 1 castings and 200,000 lbs. of No. 2 castings, to the Davis & Farnum Mfg. Co. for No. 1 and to Mechanics Iron Foundry Co. for No. 2, 2.635c. and 2.2c., respectively; other bidders: Mechanics Iron Foundry Co., 2.7c. for No. 1; Davis & Farnum Mfg. Co., 2.335c. for No. 2; Trenton Foundry and Machine Co., 2.47c. and 2.19c., respectively; Foxboro Foundry Co., 2.69c. and 2.24c.; Lunsden & Van Stone Co., 3c. and 2.5c.

Uxbridge, Mass.—Water pipe, hydrants and other material used in the proposed extensions of water mains, to Standard Cast Iron and Foundry Co., for pipe, 8-in., $22.76 f. o. b. Uxbridge; to Kennedy Valve Mfg. Co., for six 8-in. and 10 ½-in. valves, $165; for 14 Walker hydrants, to Norwood Engineering Co., $22 each hydrant; to the Eastern Metal and Refining Co., for lead to be used, $4.62½ per cwt.

Holland, Mich.—To Platt Iron Works for two 1,100-gal. per minute centrifugal pumps, connected to 2,200-volt motors; total $2,158.

Troy, Mo.—Building water system, to G. Jager, Bold Hill, Mo., $10,500.

Eastwood, N. Y.—Erection of standpipe 80 ft. high and 42½ ft. in diameter which will hold about 100,000 gals. of water, to Leonard J. Darrow, Eastwood, by Syracuse and Suburban Water Co.; standpipe will be placed at the junction of Blust st. and Joy ave.

Geneva, N. Y.—By Board of Public Works, to the Snow Steam Pump Co., Buffalo, N. Y., for furnishing pump to Water Department, about $14,000.

Cincinnati, O.—Furnishing fire plugs for year, to Bourbon Brass and Copper Works.

Ada, Okla.—Furnishing materials for water works extension, to A. Wyckoff & Son, Alexandria, La., $248.87 per 100 ft. for 4,000 ft. of 30-in. wood pipe; to same, 84c. per ft. for 33,000 ft. of 12-in. wood pipe; to National Tube Co., St. Louis, Mo., 99½c. per ft. for 33,000 ft. of steel pipe; Builders' Material and Supply Co., Kansas City, Mo., $4,548 for pumping machinery.

Yale, Okla.—Installing water works, to W. C. Swanwick Co., Joplin, Mo., about $25,000.

Lebanon, Pa.—Furnishing pumping engine for Hammer Creek plant, to Snow & Co., Buffalo, N. Y.; $14,070, foundation included, or $13,500 without foundation; other bidders: Platt Works Co., Philadelphia, $14,140 with foundation, $13,548 without foundation; Allis Chalmers Co., Milwaukee, Wis., $16,600, foundation included, and $15,100 without foundation.

Seattle, Wash.—Laying water mains on Chelau ave., to Ferguson-Coit Co., Arcade Annex, $11,605.

Spokane, Wash.—Furnishing 100 valves for water department, to Crane & Co., $1,026.70.

BIDS RECEIVED

Long Island City, L. I., N. Y.—Furnishing, delivering and erecting pumping station near the existing driven well plant at Whitestone; Paul J. Exher, 55 East 20th st., New York, $21,850; Masonry Construction Co., $23,889; Concord Construction Co., $25,547; McHarg-Barton Co., $27,870; Mitchell Construction Co., $22,200; Kelly & Kelly, Inc., $25,541; L. J. Wadsworth Construction Co., $23,477; Delaney Roberts Co., $29,413; John T. Woodruff & Son, $25,248; J. N. Knopp, $35,874; Thomas McKeown, Inc., $27,737.

LIGHTING AND POWER

Auburn, Cal.—Board of Supervisors has granted franchise to Great Western Power Co. to construct pole line along Rocklin-Folsom road and other roads in county, for the distribution of electricity for light and power.

Longmont, Col.—Citizens have voted $46,000 bonds for the construction of municipal electric light plant.

Washington, D. C.—American Consul has reported that certain city in his district is planning to erect plant for manufacture of gas for lighting, heating and cooking; works to produce at least 100,000 cubic meters of gas per day and cost about $1,250,000. Address No. 6556, Bureau of Manufactures.

Bridgeville, Del.—South Delaware Gas Co. has been granted franchise to extend mains to this city.

Miami, Fla.—Miami Gas Co. is preparing to spend $60,000 on enlargement of plant.—H. M. Van Court, Central Trust and Savings Co., Philadelphia, Pa., President.

Cartersville, Ga.—Blue Ridge Power Co. is considering construction of 150-ft. dam to develop 30,000 h. p. for transmission by electricity. Wm. A. Carlisle, Gainesville, is interested.

Swainsboro, Ga.—Citizens have voted $40,000 bonds to install electric lights and water works.

Roland, Ia.—Citizens have voted $8,000 bonds for installation of electric light plant.

Waterville, Kan.—Citizens have voted $30,000 bonds for installation of electric light plant and water works.

Lancaster, Ky.—Electric light plant has been destroyed by fire; loss $10,000; plant will be rebuilt at once.

Shreveport, La.—City is considering construction of electric light plant.

Crystal Falls, Minn.—City is planning to improve electric light plant.

Katonah, N. Y.—Public Service Commission has authorized Katonah Lighting Co. to spend $45,000 for extensions and improvements to plant; lighting service will be extended to town of Lewisboro.

Syracuse, N. Y.—Syracuse Lighting Co. has asked Public Service Commission for permission to issue $470,000 bonds to improve plant and lay about 33,000 ft. of gas pipe.

Jamestown, N. D.—Installation of addition to the White Way for the business streets is being considered.

Velva, N D.—Town Council has granted franchise for lighting streets and business and private houses to John I. Moore.

Barberton, O.—Council has passed ordinance granting Barberton Light and Power Co. right and privilege to occupy and construct poles on certain defined districts and streets.

Sentinel, Okla.—Citizens have voted $12,000 bonds for electric light plant and $3,000 for water works extensions; bids for the bonds will be received until April 28.—F. Murch, Clinton, Engineer; J. M. Terry, Town Clerk.

Baker, Ore.—Citizens have voted $25,000 bonds for installation of electric light plant.

Elgin, Ore.—McCully-Rumble Power Co. has secured site for electric power plant on the Wallowa River; company will supply light and power to local towns. About 1,000 h.p. will be developed.—J. R. Thompson, Portland, Engineer.

Newport, Ore.—Henry Hewitt and Seymour H. Bell have purchased franchise and power plant owned by Newport Power Co. and will make improvements.

Pittsburg, Pa.—Contemplating expenditure of about $3,000,000 for construction of an immense dam on Clarion River in Clarion County, application will be made for a charter for the Clarion River Power Co.; nine separate charters will be asked for as many townships.—Joseph R. Pauli, H. W. Douglass and J. P. Fife, all of Pittsburg, Incorporators.

Royersford, Pa.—Borough is considering expending $25,000 on proposed municipal electric light plant.—Fred W. Keeley, Burgess.

Chesterfield, S. C.—Chesterfield Light and Power Co. will receive bids at once for construction and installation of machinery for electric light plant. W. D. Craig can be addressed.

Dyersburg, Tenn.—Citizens will vote May 9 on $30,000 light and water bonds.

Manchester, Tenn.—Citizens have voted $25,000 electric light and water works bonds.

Alice, Tex.—Council has granted franchise to T. H. Stevens to construct electric light and power plant.

Alto, Tex.—L. S. Atkins, Center, will erect electric light and power plant; plans approved.

Galveston, Tex.—Authority has been granted to advertise for bids for installation of two new centrifugal pumps to be used in connection with steam turbines now in use in electric light department; total cost, $3,000.

Fort Stockton, Tex.—W. F. Zarbach and Chas. A. Shroff, Cleveland, O., have been granted 10-year franchise to operate electric light and ice plant; franchise calls for work to commence immediately on $20,000 plant.

Kerbyville, Tex.—Fleming-Morton Co. will at once install electric light plant.

Port Orchard, Wash.—Bids will probably be received by the State Board of Control, Olympia, about May 20, for construction of power plant from plans of Bullard & Hill, Tacoma; cost about $35,000.

Wheeling, W. Va.—Board of Control will secure bids on work of remodeling gas plant for the manufacture of water gas, as planned by Consulting Engineer Baehr.

Mosinee, Wis.—Mosinee Electric Light and Power Co. has been incorporated by Arden Paronto, J. P. Kanter and others, capital $6,000, to install plant.

CONTRACTS AWARDED

Auburn, N. Y.—Extension of five years from Oct. 1, 1911, for lighting city streets has been granted to Auburn Light, Heat and Power Co.; also contract for 10 years for ornamental lights in business section.

Riverhead, L. I., N. Y.—By Riverhead Electric Light Co., to Overton & Tuthill, local electricians, to install street lighting system.

Coleman, Tex.—To the Briggs-Weaver Machinery Co., of Dallas, for construction of electric light station.

Colorado, Tex.—Council has closed a contract with the Colorado Electric Light Co. to light up all street crossings in the city; extra large lights are to be used in the business district and 25-watt tungsten lamps in the residence parts; contract is for two years and the rate $75 per month.

Spokane, Wash.—To J. A. Roebling Sons Co., Trenton, N. J., 100 miles of No. 10 copper-clad steel wire, $3.335; four miles No. 10 copper wire, $150; 5,000 ft. of No. 12 duplex solid copper wire, $107; to Washington Electric Co., 500 two-piece insulators, $56.58.

FIRE EQUIPMENT

Pelham, Ga.—Citizens have voted $6,000 for fire station.

Danbury, Conn.—Erection of fire house is being considered.

Freeport, Ill.—Mayor C. J. Dittmar has recommended modern equipment for fire department, including aerial truck.

Indianapolis, Ind.—Council has passed ordinance authorizing $200,000 bond issue for improving fire department.

Marion, Ind.—Fire Chief Crearer has recommended enlargement and improvement of fire alarm system.

Waterloo, Ind.—Fire Chief Mungovan is urging need of new fire apparatus.

Covington, La.—Chemical Co. No. 1 is considering purchase of auto hose cart.

Baltimore, Md.—Architect Robert C. Ullrich is preparing plans for erection of $25,000 engine house at Fulton ave. and Baker st.

Fitchburg, Mass.—Town is considering erection of fire station.

Holyoke, Mass.—Board of Aldermen has voted $10,000 loan for five auto trucks.

Englewood, N. J.—Council has empowered Fire Committee to obtain estimates and costs on modern fire apparatus.

Paterson, N. J.—Proposed West Paterson fire house will be erected at New Grand and West 12th sts.

Albany, N. Y.—Board of Contract and Supply has directed Architect A. W. Fuller to prepare plans and specifications for additions and alterations to Steamer No. 6.

New York, N. Y.—Board of Estimate has approved plans and specifications for erection of 11 engine houses; auto steam fire engines will be installed in most houses; also plans for erection of 10 houses in Brooklyn.

Syracuse, N. Y.—Another ordinance calling for installation of a new central office fire alarm system is being considered by Council.

Winston-Salem, N. C.—Mayor Bellenger has recommended purchase of 2,000 ft. of hose, one hose wagon and erection of station.

Connellsville, Pa.—Following recommendations have been made by Underwriters' Association: Purchase of chemical wagon, aerial truck and hook and ladder truck, improvement of fire alarm system and erection of central fire station.

Easton, Pa.—Council is considering purchase of new apparatus.

Harrisburg, Pa.—Finance Committee has approved ordinance for purchase of 2,500 ft. of fire hose.

Central Falls, R. I.—Chief Engineer Lees has recommended purchase of 1,000 ft. of hose, steam fire engine, city truck, fully equipped with long ladders, and two fire alarm boxes.

Ipswich, S. D.—Volunteer fire department has been organized.—W. E. Herrick, Chief.

Bountiful, Utah.—Erection of hose house on Main st. is being urged.—John Ledingham, Chief.

Montpelier, Vt.—City is considering purchase of auto fire truck.

Clifton Forge, Va.—J. A. Gleason desires information and prices on automatic fire apparatus, including motor trucks or fire engines with ladder attachment and adapted to hose carrying.

CONTRACTS AWARDED

Gadsden, Ala.—To American-La France Co. for 2,000 ft. of fire hose, ladder and four nozzles.

Brainerd, Minn.—Furnishing 500 ft. of fire hose, to Nott Hose Co., Minneapolis.

New York, N. Y.—To the Fisk Rubber Co., of Chicopee Falls, Mass., for equipping the New York City Fire Department apparatus with pneumatic tires.

Cincinnati, O.—Building engine house for Co. No. 11, to Cotterell Building Co.

Seattle, Wash.—Electric chassis for hose wagon to operate from station No. 5, to Northwestern Supply Co., $3,800.

Seattle, Wash.—Laying fire alarm and police telegraph cable, to Standard Underground Cable Co., $1,441.

BRIDGES

Pasadena, Cal.—Citizens will vote Apr. 28 on $100,000 bridge bonds.

Sacramento, Cal.—Plans will be prepared by the County Surveyor for construction of a bridge over American River; cost $30,000.

Topeka, Kan.—Commissioners of Shawnee and Jefferson counties are considering formal plans for erection of $30,000 bridge at Grantville.

Georgetown, Ky.—Scott County Fiscal Court has determined to build seven new bridges in this county.

Preston, Md.—County Commissioners of Caroline and Dorchester counties have decided to construct bridge over Linchester River at Black Landing.

Holyoke, Mass.—Board of Aldermen has voted $35,000 loan for South Main and Cabot st. bridges.

Hoboken, N. J.—Governor Wilson has signed bill which permits the Hudson County Board of Freeholders, upon request of Hoboken and Weehawken, to construct viaduct at Willow ave. over tracks of the Erie and New Jersey Junction Railroads.

Camden, N. Y.—Town will build steel bridge over Fish Creek.—Paul Schultze, County Engineer.

Washington, N. C.—New Hanover County will vote May 31 on $50,000 of bonds for bridge and road construction.

Bellefontaine, O.—Plans are being prepared for construction of an arch bridge over Bluejacket River on Main st.—John R. Fawcett, City Clerk.

Cincinnati, O.—City Engineer F. H. Shipley has estimated cost of constructing foundations and substructure of the Gilbert ave. viaduct at $71,500.

Bethlehem, Pa.—Modern bridge, costing $250,000, will be erected over Lehigh River between this place and South Bethlehem.

Meadville, Pa.—Need of bridge over French Creek in Mead ave. is being urged.

West Chester, Pa.—Committee appointed by Chester County Court has approved application for erection of bridge over White Clay Creek in New London Township.

Galveston, Tex.—Board of County Commissioners wil ask new bids for erecting bridge over Todd's Bayou.

CONTRACTS AWARDED

Batavia, Ill.—Building Wilson st. east bridge, bids opened April 20, to Carl J. Erman and John MacKimmie, $30,500; other bidders, Cornelius Collins, city, $44,000; Souber & Paulson Construction Co., Lockport, $37,200; Cullen & Friedstedt Co., Chicago, $45,000; Pitts & Dougherty, Lockport, $41,700; Joliet Bridge and Iron Co., Joliet, $37,800; John J. O'Heron & Co., $38,100; the Gould Construction Co., Davenport, Ia., $36,750; Wolcott-Jones Construction Co., city, $33,150.

Petersburg, Ind.—To Harley Kinman, city, for construction and repair of 26 bridges in Warrick County, and for construction and repair of 11 bridges in Spencer County.

Clinton, Ia.—Building bridges across 4th st., Lyons, to P. V. Clarke, $2,073.30; estimate, $2,214.10.

Kansas City, Kan.—To Western Bridge Co., Harrisonville, for improvements to 5th ave. bridge, $9,400; other bidders were: A. E. Harper, $10,250; Missouri Bridge and Iron Co., $11,421; Indiana Bridge Co., $12,618; Missouri Valley Bridge and Iron Co., $13,790; Illinois Steel Bridge Co., $16,744; Kansas City Bridge Co., $14,700; A. M. Blodgett Construction Co., $14,500.

Lawrence, Kan.—Building two bridges, to Jos. Cox, by County Commissioners.

Jersey City, N. J.—By Hudson Boulevard Commissioners for Boulevard bridge over Central Railroad of New Jersey, to Joseph Murphy & Son, Inc.; bridge to be constructed of concrete and steel, $69,999; next two lowest bidders were Hellinan, Delahanty & Ferris, $86,300, and H. H. Holmes, $87,000; to Vulcan Rail and Construction Co., Brooklyn, repairing of Pennsylvania Railroad bridge, $6,642; Snare & Triest Co. bid $7,654, and Oltmer-Selbach Co., $8,115.

Trenton, N. J.—Rebuilding South Stockton st. bridge and repairing of the Titusville bridge, to McGovern Contracting Co., $2,960 and $1,835.

Columbus, O.—By County Commissioners, to construct approaches to Eberly bridge over Alum Creek, to H. E. Barthman, city.

Altoona, Pa.—Construction and repairs to number of bridges: Bridge across the Juniata River, connecting Hollidaysburg and Gaysport, to B. J. Carothers, $12,730.29; bridge across Brush Run at South Lakemont, to Fogle & Co., $3,405.95; bridge across Brush Run at the line of Logan and Frankstown Townships, to Meyer, Gable & Richards, Duncansville, $1,143.81; abutment and reinforced concrete wing wall over Old Town Run, Frankstown Township, to Farris Bridge Co., $1,065; abutment and concrete bridge over Bald Eagle Creek, Tyrone, to Farris Bridge Co., $615.

Easton, Pa.—By Northampton County Commissioners for concrete bridge across Lehigh, to Ferro Concrete Co., Harrisburg, $109,950.

Galveston, Tex.—Construction of reinforced concrete bridge across Weyer's Bayou down the island, to John Eggert, $1,922.60.

Owen Sound, Ont., Can.—Building two bridges, one of concrete and one of wood at 9th and 10th sts., to Clarke & Green, Owen Sound, $19,111.

BIDS RECEIVED

Pittsfield, Mass.—Building Elm st. bridge, H. C. Wood & Co., Westfield, lowest bidder, $12,875.

Altoona, Pa.—Building bridges, Blair County: Gaysport bridge, Ferro Concrete Co., $14,537; C. J. Carothers, $12,720.79; Fogle & Co., 12,917.07; McLaughlin & Trefall, $12,987; C. D. Hughes, $16,220; Nelson-Merydith Co., $13,832; Lanner Bros., $23,964; Vipond Construction Co., $13,096.75; South Lakemont, Fogle & Co., $3,403.95; Murphy & Appleby, $4,125; Nelson-Merydith Co., $4,732; Myers, Gable & Ritchey, $3,529.19; Farris Bridge Co., $4,300; Near Guy Lingafelt's, Fogle & Co., $1,458.56; Murphy & Appleby, $1,397; Nelson-Merydith Co., $1,382; Geo. J. Thomson & Co., $1,382; Farris Bridge Co., $1,384; Near John Brua's, Geo. J. Thompson & Co., $1,257; Myers, Gable & Ritchey, $1,189.21; Farris Bridge Co., $1,065; A. Buchanan, $1,948; Herald st., Tyrone, Geo. J. Thompson & Co., $925; Myers, Gable & Ritchey, $787.38; Lanner Bros., $974; Farris Bridge Co., $615; C. Irwin Lewis, a Hollidaysburg contractor, had a bid prepared on Gaysport bridge of $12,300, but was too late to have it submitted.

MISCELLANEOUS

Georgetown, Del.—Architect C. R. Jones, city, has been selected by County Almshouse Trustees as Supervising Architect for modern poor farm.

Jasper, Fla.—Citizens will vote on $2,500 bonds to erect city hall.

Indianapolis, Ind.—Council has passed ordinance authorizing $110,000 bond issue for erection of two buildings at City Hospital; also appropriated $5,000 for purchase of auto patrol wagon.

Wells, Me.—Citizens have voted to erect town hall.

Holyoke, Mass.—Board of Aldermen has voted $4,000 loan for auto police patrol.

Crystal Falls, Minn.—City is considering erection of municipal building.

Minneapolis, Minn.—Bids will be received May 14, 2 p. m., for $50,000 park bonds.—D. C. Brown, City Comptroller.

Jersey City, N. J.—The Shade Tree Commission has approved design of new City Park in the Fifth Ward submitted by John T. Withers, Landscape Architect.

Cincinnati, O.—Council has passed resolution authorizing $13,000 bond issue for purchase of site for branch library to be erected on West 8th st.

Brookings, S. D.—Citizens have voted $20,000 bonds to erect city hall.

Matthews, S. C.—Calhoun County has voted $20,000 bonds to erect court house and jail.

Snyder, Tex.—Scurry County has voted $16,000 bonds to erect jail.

Salt Lake City, Utah.—Council has adopted report recommending that $6,000 be appropriated for installation of adequate patrol signal system.

Prescott, Wash.—City is planning to have park; Park Commission will be named at once to take charge of details.

Seattle, Wash.—Board of Public Works has received following report from the City Engineer on probable cost of approaches to and scales for the garbage dumps: District No. 2, $4,500; No. 3, $360; No. 4, $710; No. 5, $2,400; No. 6, $1,500; No. 7, $2,000; No. 8, $430; No. 9, $1,600.

Milwaukee, Wis.—Council will consider purchase of auto for Department of Public Works.

Bogota, Columbia.—Luis Maria Terán is interested in installation of disposal plant capable of disposing of garbage of city of 100,000; literature desired.

CONTRACTS AWARDED

San Francisco, Cal.—Furnishing and delivering steel trolley poles for Geary st. municipal railway, to the National Tube Co., $28.16 each for poles 28 ft. long, and $29.90 each for poles 30 ft. long.

New York, N. Y.—To Kindling Machinery Co., Milwaukee, Wis., for furnishing 150 patented Kindling street sprinklers of the squeegee type.

Saranac Lake, N. Y.—Cleaning pavements of village, by Board of Trustees, to Fred Williams, $169 per month.

York, Pa.—Installing 1,620 street signs, to Wm. J. Hartman, -8c. each.

Rotan, Tex.—Building city hall, to R. L. Holden, $9,600.

Racine, Wis.—Collecting garbage throughout city, to Henry Devine.

TOO LATE FOR CLASSIFICATION

BIDS ASKED FOR

State	City	Received Until	Nature of Work	Address Inquiries to
			STREET IMPROVEMENTS	
New York	Albany	May 1, 3 p.m.	Grading, setting granite curbs, and paving with repressed vitrified shale paving blocks on portions of various streets, laying concrete sidewalks, building receiving basins and lay. vitrified pipe sewers and appurtenances	Isidore Wachsman, Secy. Bd. C. & S.
New Jersey	Perth Amboy	May 1, 8:30 p.m.	Constructing bitulithic pavement on two streets	Geo. M. Adair, Street Comr.
Pennsylvania	Philadelphia	May 1	Repairing asphalt pavements in various streets	J. E. Reyburn, Mayor.
New Jersey	Avalon	May 1, 8 p.m.	Grading, graveling and curbing about 4,600 lin. ft.; sand filling by hydraulic dredge 45,000 cu. yds	Gilbert S. Smith, Peermont, Mayor.
Mississippi	Grenada	May 1	Constructing about 150,000 ft. granolithic sidewalks	L. B. James, City Recorder.
Indiana	Logansport	May 2, 10 a.m.	Constructing gravel roads in Jefferson township	John E. Wallace, County Auditor.
Michigan	Charlevoix,	May 2	Paving 3 streets with macadam, bitulithic, creosoted wood block, concrete or other material; constr. curbs and gutters.	E. J. Hiller, City Clerk.
Pennsylvania	McKeesport	May 2, 8 p.m.	Repaving with vitrified brick various streets and laying brick and concrete sidewalks	C. E. Soles, City Comptroller
Kansas	Pittsburg	May 3, 4 p.m.	Pav. about 4,500 sq. yds. with vit. brick on concrete base	L. E. Curfman, City Engr.
Maryland	Baltimore	May 3, 11 a.m.	Grading, constructing storm drains, concrete catch basins, laying fibre conduit, constructing lamp-post foundations, bitumen macadam work, concrete curbs, etc., in Swan Avenue and Druid Hill Park and Riverside Park	J. Barry Mahool, Pres. Bd. Awards.
Indiana	Rockville	May 3, 1:30 p.m.	Constructing gravel road in Howard township	James E. Elder, County Auditor.
Ohio	Cleveland	May 3, 11 a.m.	Grading and improving portion of Harvard road	Frank R. Lander, County Surveyor.
Indiana	Ft. Wayne	May 9, 10 a.m.	Furn. crushed gravel for roads in Allen County	Calvin H. Brown, County Auditor
Maryland	Baltimore	May 10, noon	Constr. 57.10 miles of State Hwy. in twenty counties	John M. Tucker, Chm. S. R. Com.
Ohio	Cincinnati	May 19, noon	Constr. Compton rd. in Hamilton Co.; mac. exten. of Struble rd.	Stanley Struble, Pres. Co. Comrs.
California	Lodi	May 15	Macadamizing streets, cost of work about $42,432.65	City Clerk.
Ohio	Cincinnati	May 22, noon	Grade, cement park lot surrounding Public School	C. W. Handman, Business Manager
Minnesota	Minneapolis	Apr. 28, 7:30 p.m.	Furn. 5,000 sq. yds. of granite blocks; also lumber for use during year ending May 1, 1912	Henry N. Knott, City Clerk.
			SEWERAGE	
New Jersey	Trenton	May 2, 8 p.m.	Constructing sewer with house connections	Harry B. Salter, City Clerk.
New Mexico	East Las Vegas	May 17, 4 p.m.	Constr. 19,750 lin. ft. 8-in. vitrified sewer; 3,350 lin. ft. 10-in. and 100 lin. ft. 15-in.; 50 manholes; 12 single flush tanks com.	Chas. Tamme, City Clerk.
Ohio	E Youngstown,	May 22, noon	Constructing sanitary sewer	J. P. Carney, Village Clerk.
			WATER SUPPLY	
New York	Albany	May 1, 3 p.m.	Furn. iron body, bronze mounted fire hydrants	Isidore Wachsman, Secy. Bd. C. & S.
Minnesota	Madison Lake	May 1, 6 p.m.	Installing a water works system	F. B. Knoff, Village Clerk.
California	Corning	May 2, 8 p.m.	Constructing a water works system complete	M. E. Kenny, Pres. Bd. Trustees.
New York	New York	May 4, 11 a.m.	Construct. a conc. and c. i. pipe cond. for the Wakefield ave bliff	Board Water Supply.
Nebraska	Chappell	May 8, noon	Constr. w. w. and an electric light plant	W. E. Donner, Engr. Grant Is. Neb.
			BRIDGES	
Indiana	Bloomfield	May 1, 2 p.m.	Constr. 3 bridges of 70, 60 and 40-ft. spans, respectively	C. H. Jennings, County Auditor.
Indiana	Decatur	May 2, 10 a.m.	Constr. 4 bridges and 6 arches, and the repair of 3 bridges	H. S. Michaud, County Auditor.
Indiana	Mt. Vernon	May 3	Constructing 4 bridges in Black twp. and 2 in Robb twp.	County Commissioners.
Pennsylvania	Hollidaysburg	May 5, noon	Repairing 5 bridges in Blair County	W. S. Hostler, Clk. Co. Com
Indiana	Shelbyville	May 8, 10 a.m.	Constr. a bridge in Sugar Creek township and constructing concrete abutments and the repair of St. Paul bridge	G. B. Huntington, County Auditor.
Maryland	Baltimore	May 10, noon	Constructing one concrete bridge in Calvert County	John M. Tucker, Chm. S. R. Com.
			MISCELLANEOUS	
Minnesota	Duluth	Apr. 27, 4 p.m.	Furn. 1 automobile wagon, 30 H.P., carrying 2,000 lbs	L. N. Case, Mgr. B. W. & L. Comrs.
New Jersey	Perth Amboy	May 1, 8:30 p.m.	Making repairs to the fire houses of the city	Wilbur Laroe, City Clerk.
Maryland	Baltimore	May 3, 11 a.m.	Furnishing a preparation for laying dust and preserving macadam roads; with the use of three sprinklers to Oct. 15, 1911.	J. Barry Mahool, Pres. Bd. Awards

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STREET IMPROVEMENTS

Los Angeles, Cal.—Widening of portion of Fifth st. is being considered.

Seaford, Del.—County Commissioners are considering plans for extensive improvements on county road leading to Seaford.

Washington, D. C.—Report from American consular officer in Canada states that taxpayers in one of the towns of his district have decided to borrow $10,000 to improve streets and to purchase steam road roller.—Address No. 6578, Bureau of Manufactures.

East St. Louis, Ill.—Board of Local Improvements has decided to improve 35th st. between Market and State st.

Fort Wayne, Ind.—Establishment of 30 miles of stone roads in Lafayette Township at cost of $150,000 is being considered.

Fort Wayne, Ind.—Board of Public Works has ordered plans for paving number of streets.

Duluth, Minn.—Cost of grading, graveling and guttering Getchell road has been estimated by the City Engineer at $22,667.40.

North Wildwood, N. J.—Citizens will vote May 9 on $60,000 bonds to improve streets. —Geo. A. Redding, Borough Clerk.

Williamstown, N. J.—Monroe Township Committee is considering its first ordinance for paving streets.

Fredonia, N. Y.—The Chautauqua County Board of Supervisors has approved plans for an improved road from Fredonia to Cassadaga.

Marion, O.—Council has passed ordinance for paving Vine st. with brick, 816 sq. yds.; Campbell st. with brick, 820 sq. yds.; tar macadam alley paving, 320 sq. yds., and sidewalks on two streets, 2,000 lin. ft.; bids will soon be asked.—Pearl R. Mears, City Engineer.

Toledo, O.—County Commissioners will sell $173,850 county bonds May 12 for purpose of raising money with which to make road repairs throughout county during 1911 and 1912.

Belleville, Tex.—First Precinct, Austin County, has voted $50,000 good road bonds.

Brady, Tex.—McCullough County has voted $75,000 bonds for improvement of roads.

El Paso, Tex.—Council has decided to pave portion of East San Antonio st.

Janesville, Wis.—Rock County will spend about $32,000 in improvement of roads.

Coquitlam, B. C., Can.—Citizens have passed $150,000 by-law for new roads and $50,000 for sidewalks.

Moncton, B. C., Can.—Bids will soon be asked for construction of sidewalks at cost of $9,000.

CONTRACT AWARDED

Rochester, N. Y.—Street improvements: Basin st. asphalt pavement, to Whitmore, Rauber & Vicinus, $1,080.40; Lime st. asphalt pavement, to Rochester Vulcanite Pavement Company, $15,504; Kenwood ave. asphalt pavement, to Whitmore, Rauber & Vicinus, $2,196.40; Rugby ave. macadam pavement, to Brayer & Albaugh, $1,877.50; Normandy ave. macadam pavement, to Brayer & Albaugh, $1,900; Warwick ave. asphalt pavement, to Whitmore, Rauber & Vicinus, $2,090.50; Post st. macadam pavement, to Thomas Holahan, $874; Sherwood ave. asphalt pavement, to Whitmore, Rauber & Vicinus, $3,452.50; Vose st. brick pavement, to Julius Friedrich Company, $7,199.50; Woodbine ave. macadam pavement, to Brayer & Albaugh, $1,883.75.

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FIRE EQUIPMENT

Kaysville, Utah.—Council will be asked to purchase adequate fire fighting equipment.—E. C. Blood, Chief.

Portsmouth, Va.—Council has decided to ask for bids for 2,500 ft. of fire hose.

Salt Lake City, Utah.—Council is considering resolution calling for expenditure of not less than $50,000 for replacing of present horse-drawn fire equipment with complete motor-propelled apparatus.

CONTRACTS AWARDED

Kinney, Minn.—Erecting chemical engine house, to Chas. Wilson.

Galveston, Tex.—John Egert, for complete overhauling and repair of engine house No. 6 on Broadway.

MISCELLANEOUS

Pomona, Cal.—J. M. Paige, Park Superintendent, has completed plans for five-acre park to be constructed at North Pomona.

Boston, Mass.—Architect Edw. T. P. Graham, 20 Beacon st., will prepare plans for erection of proposed city hall annex.

Clarkfield, Minn.—Bids will be received May 12, 8 p. m., for $6,000 bonds for village hall.—Alfred Hulteen, Village Recorder.

Salt Lake City, Utah.—Council has voted in favor of proposed new $38,752 city stables, wagon sheds, warehouse, workshop and garage, to be established between Sixth and Seventh South and State and Second East sts.

Janesville, Wis.—Mayor John C. Nichols has recommended purchase and immediate installation of street signs.

CONTRACT AWARDED

Rochester, N. Y.—Furnishing 10,000 ft. of armored cable for police and fire alarm telegraph system, to the Standard Underground Cable Company, $970; furnishing of 100 street monuments, to Whitmore, Rauber & Vicinus, $145.

PROPOSALS

GRADING, SEWER, WATER MAINS, RESERVOIR.

Springdale, Pa.

Sealed proposals will be received by the Council of the Borough of Springdale, Pa., until 8 o'clock P. M., on Monday, the 1st day of May, 1911, for the grading of certain streets, the construction of a system of sewers, a system of water lines and the building of a reservoir.

Approximate quantities are 30,000 cubic yards of grading, 36,660 lineal feet of sewers, 35,660 lineal feet of cast-iron water lines and one 350,000-gallon capacity reservoir.

A certified check for $1,000, payable to the Treasurer of the Borough of Springdale, must accompany each proposal. All proposals must be sealed and addressed to H. J. Barnes, Clerk of Council, Springdale, Pa., and have the words "Grading, Sewer and Water Proposal" marked on the outside of the envelope.

Plans and specifications may be seen and bidding blanks and all necessary information may be had at the office of the Borough Engineers, Douglass & McKnight, 1709 Union Bank Bldg., Pittsburg, Pa. Council reserves the right to reject any or all bids.

R. J. CAMPBELL,
J. A. STEVENSON,
C. G. PORTER,
Committee of Council.

(19-26)

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Harris Engineering Co., Paul Jones Building, Louisville, Ky.

PROPOSALS

NOTICE TO CONTRACTORS

Police Signal, Fire Alarm and Telephone System

Passaic, N. J.

By direction of the City Council proposals will be received by the City of Passaic, New Jersey, from contractors for the manufacture, delivery and installation of a Police Signalling System, Fire Alarm Equipment and Municipal Telephone Exchange for the City of Passaic, in accordance with the conditions and specifications and drawings on file in the office of the City Clerk, from whom blank form of proposal may be obtained.

All proposals must be for the entire work, as no separate bids will be received for any part of the work.

All proposals must be accompanied by a surety bond or a certified check payable to the City of Passaic in a sum equal to at least 2 per cent of the amount of the bid.

The successful bidder will be required to give a surety bond in a responsible surety company for the full amount of the contract for the faithful performance of the contract and for indemnity against suits or claims for infringement of patents and as security that he will guarantee all workmanship and materials for a period of five years.

Every bidder must furnish satisfactory evidence of his experience and equipment, together with list of similar systems installed.

All bidders must state number of working days required to complete work, and damages of ten dollars per day will be stipulated in the contract for every day's delay over the time agreed upon for the completion of the work.

No bid will be considered unless samples of the following are submitted therewith:

One multiple circuit puncturing register.
One automatic time and date stamp.
One take-up reel.
One central station flash light equipment.
One police box.
One flash light.
One flash light controller.
One fire alarm box.
One automatic fire alarm repeater.

All bids must be enclosed in a sealed envelope endorsed on the outside "Proposal for Police Signaling System, Fire Alarm Equipment and Municipal Telephone Exchange," and must be delivered to the City Clerk or his deputy on or before Friday, May 19, 1911. No bid will be received after 8:00 p. m.

The City of Passaic reserves the right to reject any or all bids.

M. B. MATTHEWS,
Chairman Committee on Public Safety.
THOMAS R. WATSON,
City Clerk.

(26-3-10)

BRICK PAVING

Hudson, N. Y.

Sealed bids will be received until 10:30 a. m., May 2, 1911, by the Secretary of the Commission of Public Works of the City of Hudson, N. Y., for furnishing material and labor necessary to relay approximately 5400 lin. ft. of curbstone and to pave about 13,800 square yards of street with vitrified brick.

Plans and specifications may be seen at the office of the City Clerk or the City Engineer.

The Commission of Public Works reserves the right to reject any and all bids.

WILLIAM WORTMAN,
City Clerk.
M. J. O'HARA,
City Engineer.